

Middletown Power LLC P.O. Box 1001 1866 River Road Middletown, CT 06457

October 14, 2014

Ms. Jing Chen CT Department of Energy and Environmental Protection 79 Elm Street Hartford, CT 06106

Subject: Semi-Annual Site Status Update

Middletown Station, 1866 River Road, CT

Dear Ms. Chen:

Middletown Power LLC respectfully submits the enclosed Semi-Annual Site Status Update prepared by CB&I Environmental and Infrastructure, Inc. (CB&I) for the Middletown Station. This status update covers environmental activities performed from February 2014 through July 2014 at the subject site.

Please contact Keith Shortsleeve, Environmental Compliance Specialist at Middletown Power LLC with any questions or for additional information at (860) 638-3102 or via email at keith.shortsleeve@nrgenergy.com.

Sincerely,

Middletown Power LLC

Stephen J. Cobbe Site Manager

Cc:

K. Shortsleeve, Middletown Power LLC (hard copy and electronic)

B. Spooner, NRG (electronic)
Juan Perez, USEPA (electronic)
A. Walker, LEP, CB&I (electronic)

File



CB&I Environmental & Infrastructure 150 Royall Street Canton, Massachusetts 02021 617-589-5111 Fax: 617-589-5495

WWW.CBI.com

October 14, 2014 Project #: 1009634026.09000000

Ms. Jing Chen CT Department of Energy & Environmental Protection 79 Elm Street Hartford, CT 06106

Subject: Semi-Annual Site Status Update

Middletown Generating Station

Middletown, CT

Dear Ms. Chen:

On behalf of Middletown Power LLC, CB&I Environmental & Infrastructure (CB&I) has prepared this letter to provide a semi-annual site status update for the subject site. In addition, CB&I is providing the Connecticut Department of Energy & Environmental Protection (CTDEEP) with a schedule for continuing environmental activities at the site.

#### **FEBRUARY 2014 THROUGH JULY 2014 ACTIVITIES**

Environmental field activities completed at the site between February 2014 and July 2014 include groundwater monitoring and Engineered Control (EC) inspections. These activities are discussed below. Other environmental activities completed for the subject site during this reporting period include the following:

- Property access approval was obtained from the Connecticut Department of Transportation (ConnDOT) in July 2014. Access is required to implement the EC in the southeast portion of SB-2 which extends onto ConnDOT property.
- CTDEEP approved the re-registration for continued coverage under the General Permit for the
  Discharge of Stormwater and Dewatering Wastewaters from Construction Activities effective
  October 1, 2013 for the Engineered Control project at Middletown Station in a letter dated May 9,
  2014. The letter identified Permit No. GSN002126 was effective as of February 1, 2014.

## **Groundwater Monitoring**

Shaw conducted a groundwater sampling event on May 5 and 6, 2014. Groundwater monitoring and sampling was completed at twelve monitoring wells in May 2014. Monitoring well locations are shown on the site plans (**Figures 1** and **2**). A list of the monitoring wells sampled and the analyses conducted is provided in the table below. Laboratory analysis was completed by Accutest Laboratories in Marlboro, Massachusetts. The groundwater sampling event was generally consistent with the monitoring plan provided in EC Part 2 dated November 2010 and the Site-Wide Remedial Action Plan (RAP) dated October 2011.

	Laboratory Analysis May 5 and 6, 2014 Groundwater Monitoring Event										
Location	PAH Metals EPH										
TW-10		X									
TW-14		X									
TW-17D		X									
TW-18	X										
TW-21D		X									
AOC01-MW1R		X									
AOC01-MW2		X									
AOC05-MW1	Х		X								
AOC02-SB1-MW1		X									
AOC08-SB1-MW1	Х		Х								
AOC09-SB1-MW1	Х	As only	Х								
AOC09-SB2-MW2	Х	X	Х								

#### **Notes**

- 1. Polycyclic aromatic hydrocarbons (PAH) including 2-methlynapthalene by EPA Method 8270 SIM (Lab Code: SW846 8270D by SIM, SW846 3510C).
- Total Metals including arsenic, lead, selenium, vanadium, and zinc by EPA Method 6010C.
- 3. Extractable petroleum hydrocarbons (EPH) by Connecticut Department of Public Health Method (Lab Code: MADEP EPH Rev. 1.1, SW846 3510C).

During the May 2014 groundwater sampling event, depth to groundwater was measured at each of the monitoring wells using an electronic interface probe (IP) capable of detecting light non-aqueous phase liquid (LNAPL). LNAPL was not detected in monitoring wells gauged during this event. Results of water level monitoring can be found in **Table 1**.

During the May 2014 groundwater monitoring event, CB&I collected groundwater samples from the monitoring wells listed in the above table using a modified low flow sampling technique. No samples were field filtered. Each well was pumped at a rate that produced little or no drawdown while parameters including temperature, pH, dissolved oxygen, turbidity, and conductivity were monitored. Groundwater samples were then collected after the parameters stabilized to ensure that the groundwater sample was representative of local aquifer conditions. Laboratory analysis of each sample is noted in the table above. The complete laboratory analytical report is provided in **Attachment 1**.

The groundwater analytical results from the May 2014 sampling event are summarized in **Table 2**. The results of the May 2014 event are generally consistent with the previous several events. The groundwater analytical results for the four most recent sampling events, including May 2014, are summarized in **Table 3**. These tables compare the results to applicable criteria for this site, which is classified as groundwater GB. Compounds detected in groundwater samples collected in May 2014 include the following:

- Acenaphthene and fluorene were detected in the groundwater sample collected from AOC09-SB2-MW2 and the field duplicate. The concentration of fluorene detected was less than the SWPC of 140,000 μg/L. Acenaphthene was also detected in the groundwater sample collected from AOC08-SB1-MW1. There is no Connecticut Surface Water Protection Criteria (SWPC) defined for acenaphthene.
- Arsenic was detected in groundwater samples collected from TW-10 at 4.6 μg/L and TW-18 at 11 μg/L (12.5 μg/L in the field duplicate). The concentrations detected were greater than the SWPC of 4 μg/L.
- Lead was detected in the groundwater sample collected from TW-18 at 2.9(J) μg/L (2.9[J] μg/L in the field duplicate). The concentrations detected were less than the SWPC of 13 μg/L.
- Selenium was detected in groundwater samples collected from AOC01-MW1R at 27 μg/L, TW-17D at 49.1 μg/L, TW-18 at 53.7 μg/L (56.7 μg/L in the field duplicate), and TW-21D at 32.4 μg/L. The concentrations detected were less than the SWPC of 50 μg/L except at TW-18.
- Vanadium was detected in groundwater samples collected from TW-10 at 7.5(J) μg/L, TW-14 at 4.6(J) μg/L, TW-17D at 400 μg/L, and TW-18 at 161 μg/L (167 μg/L in the field duplicate). There is no established SWPC for vanadium. However, as a point of reference, the CTDEEP has approved an additional SWPC of 1,500 μg/L for the NRG Devon facility in Milford, CT and the Massachusetts Department of Environmental Protection (MassDEP) GW-3 standard is 4,000 μg/L.
- Zinc was detected in groundwater samples collected from AOC01-MW2 at 65.1 μg/L and AOC09-SB2-MW2 at 81.4 μg/L. The concentrations detected was less than the SWPC of 123 μg/L.
- C9-C18 aliphatics were not detected in groundwater samples collected from AOC08-SB1-MW1 but were detected in the field duplicate. C19-C36 aliphatics and C11-C22 aromatics were detected in groundwater samples collected from AOC08-SB1-MW1 and the field duplicate. C11-C22 aromatics were also detected in groundwater samples collected from AOC09-SB2-MW2. The SWPC for aliphatic and aromatic hydrocarbons were obtained from the July 2012 CTDEEP technical support document. The concentrations of aliphatics detected were less than their respective SWPC from the guidance but the concentrations of C11-C22 aromatics detected at AOC08-SB1-MW1 and in the field duplicate were greater than the guidance SWPC of 250 μg/L.

Laboratory analysis completed as part of these site activities was requested to be conducted in accordance with CTDEEP's Reasonable Confidence Protocol (RCP). The work completed during this reporting period was performed in general accordance with the site specific Quality Assurance Project Plan (QAPP). CB&I performed a data validation review for the laboratory report. The data validation work sheet is attached to the laboratory report included in **Attachment 1**. The laboratory analysis was completed in accordance with CTDEEP's RCP; however, a few minor quality assurance/quality control

(QA/QC) issues, which are summarized in the validation worksheet and laboratory report narrative, were identified. QA/QC issues noted included:

- Due to the presence of low levels of naphthalene and zinc in the field equipment blank sample, associated samples with positive results reported at < 5 times the concentration detected in the field blank were qualified as non-detect ("U").
- Due to the presence of low levels of phenanthrene and naphthalene in two method blanks, associated samples with positive results reported at < 5 times the concentrations detected in the method blanks were qualified as non-detect ("U"). Laboratory assigned "B" qualifiers indicating an analyte is found in the associated method blank will be qualified with a "J" unless "U" qualified due to blank contamination.
- The relative percent differences (RPD) for selenium, vanadium, and zinc were outside the control limits in the serial dilutions for select samples. The percent differences are acceptable due to low initial sample concentrations at less than 50 times the instrument detection limit. Therefore, no sample qualification is necessary.
- The EPH surrogate recoveries were outside the control limits in select samples where surrogate standard was not added. The EPH extract was analyzed instead; therefore, no sample qualification is necessary.

A number of sample results for metals were reported at concentrations less than the reporting limit but greater than the method detection limit. Although this is not specifically a QA/QC issue, the results should be considered estimated and are qualified with a "J" unless "U" qualified due to blank contamination. In summary, the qualifications applied to the results had no overall effect on the conclusions drawn from the data, and the data, as qualified, is acceptable for the purposes of this submittal.

#### Construction of Site-Wide EC

Construction of the site-wide EC conducted during this reporting period included mobilization, site preparation, and installation of pavement (replacement and repair) and stone in select areas. CFM Construction, Inc. completed the asphalt work. The stone EC was installed by H. E. Butler Construction Company. NRG performed oversight of both contractors during construction. As per NRG and as verified by CB&I, the EC completed through May 2, 2014 has met the specifications approved in the October 2011 RAP. The progress as-built drawings of the EC completed through May 2, 2014 are provided in Attachment 2. Additional EC construction was performed later in this reporting period and will be documented on as-built drawings in a subsequent status report.

#### **EC Inspections**

As stated in Section 6.0 of the CTDEEP-approved EC, routine inspections of the EC installed to date begin one month after completion and are performed quarterly for the first year. NRG and CB&I have conducted the required periodic inspections of the completed SB-1 EC and several areas of stone and pavement cover. Additional areas of the EC will be inspected as they are completed. During this reporting period, NRG conducted routine EC inspections on February 5, 2014 and May 5, 2014. A modified version of Table 1 of the EC Part 2, the Engineered Control Inspection Checklist, was completed to document the inspections (Attachment 3). CB&I conducted an EC inspection on May 2, 2014. During the inspections, the EC was observed to be in reasonable condition with no significant signs of a washout, erosion, or other failure.

#### SITE SCHEDULE

Outlined below is an estimated site schedule that Middletown Power LLC, expect to follow in the next two years.

Activity	Anticipated Date
Continued Groundwater Monitoring	Q3 2014, Q2 2015
RAP Complete (i.e., construction complete)	Q3 2015
RAP Completion Report (includes Engineered Control Completion Report)	Q4 2015
Post Remediation Monitoring	2016

NRG will continue to provide updates on the status of response actions at the subject site on a semiannual basis as requested by CTDEEP. Plans, submittals, and reports will be copied to the USEPA.

If you have any questions regarding this letter or any other matter, please do not hesitate to call.

Sincerely,

Andrew D. Walker, LEP, LSP

**Project Manager** 

CB&I Environmental & Infrastructure

Phone: 617-589-6143

Email Address: Andrew.Walker@CBI.com

**Enclosures:** 

Table 1 – Groundwater Gauging Data

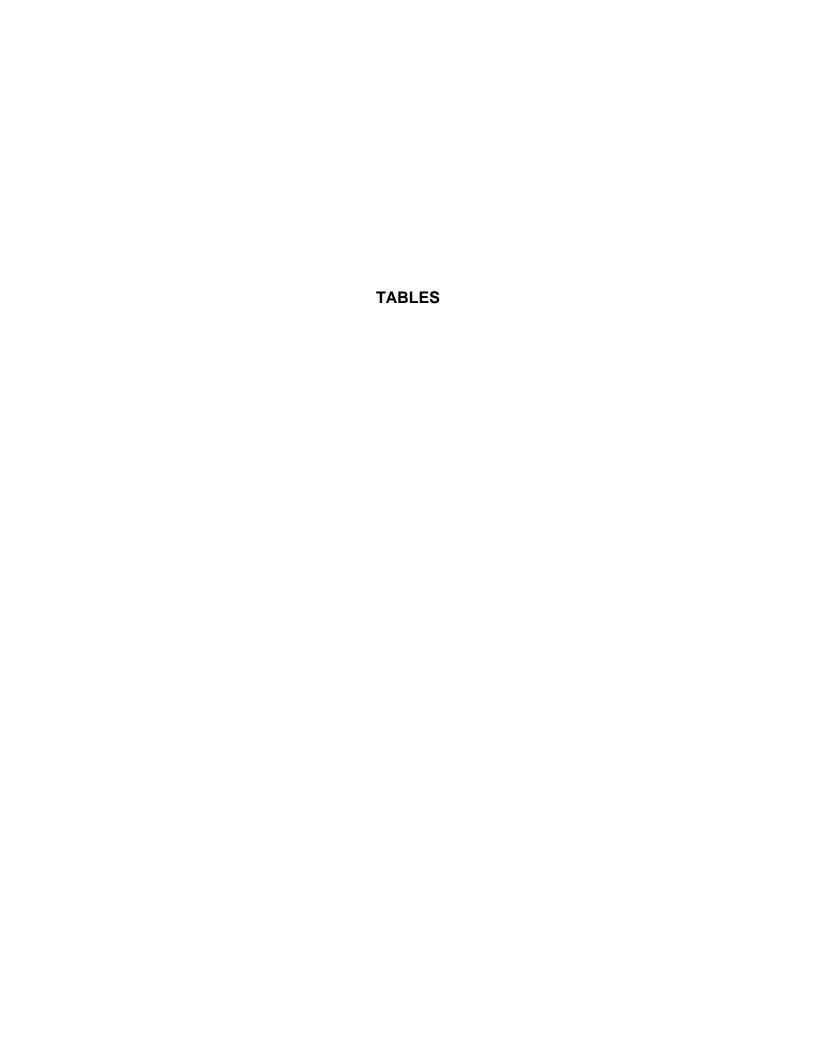
Table 2 – Groundwater Analytical Results – Detections May 2014 Table 3 – Groundwater Analytical Results – July 2012 to May 2014

Figure 1 – Site Plan – Western Figure 2 - Site Plan - Eastern

Page 5

Attachment 1 – Laboratory Analytical Report and Data Validation Attachment 2 – As-Built Engineered Controls Revised May 2014 Attachment 3 – Engineered Control Inspection Checklists

cc: Keith Shortsleeve, Middletown Power LLC (hard copy and electronic copy)
Robert Spooner, NRG (electronic copy)
Juan Perez, USEPA (electronic copy)



# TABLE 1 GROUNDWATER GAUGING DATA (05/05/2014 - 05/06/2014)

## Middletown Power LLC 1866 River Road Middletown, Connecticut

Location	Date	Reference Elevation (Feet)	Depth to Water (Feet)	Depth to LNAPL (Feet)	LNAPL Thickness (Feet)	Groundwater Elevation (Feet)	Notes
AOC01-MW14	05/06/2014	NA	27.72		ND	NA	DTB = 39.35'
AOC01-MW2	05/06/2014	NA	26.85		ND	NA	
AOC02-SB-MW1	05/06/2014	27.60	21.31		ND	6.29	DTB = 35.80'
AOC05-MW1	05/06/2014	21.27	10.37		ND	10.90	DTB = 24.40'
AOC08-SB-MW1	05/06/2014	25.38	17.78		ND	7.60	DTB = 32.00'
AOC09-SB1-MW1	05/06/2014	27.39	20.99		ND	6.40	DTB = 34.60'
AOC09-SB2-MW2	05/06/2014	24.92	17.63		ND	7.29	DTB = 34.55'
TW-10	05/06/2014	32.60	27.99		ND	4.61	DTB = 43.15'
TW-14	05/06/2014	28.33	22.77	-	ND	5.56	DTB = 46.94'
TW-17D	05/06/2014	34.48	28.88		ND	5.60	DTB = 41.80'
TW-18	05/06/2014	36.92	31.08		ND	5.84	DTB = 41.12'
TW-21D	05/06/2014	34.42	28.93		ND	5.49	DTB = 36.96'

Notes: NA = Not Available

--- = Not Applicable ND = Not Detected DTB = Depth to Bottom

Groundwater Analytical Results - Detections May 2014 Middletown Power LLC, Middletown, CT

TABLE 2

		AOC01-MW1R	AOC01-MW2	AOC08-SB1-MW1	AOC08-SB1-MW1	AOC09-SB2-MW2	AOC09-SB2-MW2	TW-10	TW-14
		5/6/2014	5/6/2014	5/6/2014	5/6/2014	5/5/2014	5/5/2014	5/6/2014	5/6/2014
CONSTITUENT	SWPC	Primary	Primary	Primary	Duplicate	Primary	Duplicate	Primary	Primary
SVOCs (ug/L)									
Acenaphthene				0.1	<0.14	0.096J	0.12		
Fluorene	140000			<0.10	<0.20	0.16	0.22		
EPH (ug/L)									
C9-C18 Aliphatics (FID)	770			<100	143	<100			
C19-C36 Aliphatics (FID)	530			109	134	<100			
C11-C22 Aromatics	250			{287}	{461}	150			
Total Metals (ug/L)									
Arsenic	4	<2.9	<2.9			<2.9		{4.6}	<2.9
Lead	13	<1.7	<1.7			<1.7		<1.7	<1.7
Selenium	50	27	<4.8			<4.8		<4.8	<4.8
Vanadium		<2.8	<2.8			<2.8		7.5J	4.6J
Zinc	123	<5.3U	65.1			81.4		<5.6U	<6.8U

Notes: SWPC = Connecticut Surface Water Protection Criteria

SWPC for aliphatic and aromatic hydrocarbon ranges from July 2012 CTDEEP technical support document

--- = Constituent not analyzed for

NE = Not establisehd

ug/L = micrograms per liter

{Bold} exceeds least stringent applicable criteria

J = Estimated value based on validation

U = Below detection limit as deteremined by validator

B = Analyte found in associated method blank as determined by validator

Groundwater Analytical Results - Detections May 2014 Middletown Power LLC, Middletown, CT

TABLE 2

		TW-17D	TW-18	TW-18	TW-21D
		5/5/2014	5/6/2014	5/6/2014	5/6/2014
CONSTITUENT	SWPC	Primary	Primary	Duplicate	Primary
SVOCs (ug/L)					
Acenaphthene					
Fluorene	140000				
EPH (ug/L)					
C9-C18 Aliphatics (FID)	770				
C19-C36 Aliphatics (FID)	530				
C11-C22 Aromatics	250				
Total Metals (ug/L)					
Arsenic	4	<2.9	{11.0}	{12.5}	<2.9
Lead	13	<1.7	2.9J	2.9J	<1.7
Selenium	50	49.1	{53.7}	{56.7}	32.4
Vanadium		400	161	167	<2.8
Zinc	123	<6.3U	<6.0U	<5.7U	<5.4U

Notes: SWPC = Connecticut Surface Water Protection Criteria

SWPC for aliphatic and aromatic hydrocarbon ranges from July 2012 CTDEEP technical support document

--- = Constituent not analyzed for

NE = Not establisehd

ug/L = micrograms per liter

{Bold} exceeds least stringent applicable criteria

J = Estimated value based on validation

U = Below detection limit as deteremined by validator

B = Analyte found in associated method blank as determined by validator

Middletown Power LLC, Middletown, CT

		AOC01-MW1R	AOC01-MW1R	AOC01-MW1R	AOC01-MW1R	AOC01-MW2	AOC01-MW2	AOC01-MW2	AOC01-MW2	AOC02-SB1-MW1	AOC02-SB1-MW1
		7/9/2012	5/10/2013	12/12/2013	5/6/2014	7/9/2012	5/10/2013	12/12/2013	5/6/2014	7/10/2012	5/10/2013
CONSTITUENT	SWPC	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
SVOCs (ug/L)			_	_	_	-	_	_	_	-	-
Acenaphthene	NE										
Acenaphthylene	0.3										
Anthracene	1100000										
Benzo(a)anthracene	0.3										
Benzo(a)pyrene	0.3										
Benzo(b)fluoranthene	0.3										
Benzo(ghi)perylene	NE										
Benzo(k)fluoranthene	0.3										
Chrysene	NE										
Dibenzo(a,h)anthracene	NE										
Fluoranthene	3700										
Fluorene	140000										
Indeno(1,2,3-cd)pyrene	NE										
2-Methylnaphthalene	NE										
Naphthalene	NE										
Phenanthrene	0.3										
Pyrene	110000										
EPH (ug/L)											
C9-C18 Aliphatics (FID)	770										
C19-C36 Aliphatics (FID)	530										
C11-C22 Aromatics	250										
ETPH (mg/L)											
ETPH	NE										
Total Metals (ug/L)											
Arsenic	4	<4.0	<2.9	<2.9	<2.9	<4.0	{6.2}	<2.9	<2.9	<4.0	<2.9
Lead	13	<5.0	<1.7	<1.7	<1.7	<5.0	<1.7	<1.7	<1.7	<5.0	<1.7
Selenium	50	12.2	10	26.9	27	<10	<4.8	<4.8	<4.8	<10	<4.8
Vanadium		<10	<2.8	<2.8	<2.8	<10	5.9J	12.4	<2.8	<10	3.2J
Zinc	123	<20	5.5J	<3.6U	<5.3U	<20	7.5J	<16.5U	65.1	<20	7.4J

**Notes:** SWPC = Connecticut Surface Water Protection Criteria.

SWPC for aliphatic and aromatic hydrocarbon ranges from July 2012 CTDEEP technical support document.

--- = Constituent not analyzed for.

NE = Not established

mg/L = milligrams per liter

ug/L = micrograms per liter

{Bold} exceeds least stringent applicable criteria

J = Estimated value based on validation.

Middletown Power LLC, Middletown, CT

		OC02-SB1-MW	OC02-SB1-MW	AOC05-MW1	AOC05-MW1	AOC05-MW1	AOC08-SB1-MW1	AOC08-SB1-MW1	AOC08-SB1-MW1	AOC08-SB1-MW1
		12/12/2013	5/5/2014	5/9/2013	12/12/2013	5/5/2014	7/10/2012	7/10/2012	5/9/2013	5/9/2013
CONSTITUENT	SWPC	Primary	Primary	Primary	Primary	Primary	Primary	Duplicate 1	Primary	Duplicate 1
SVOCs (ug/L)										
Acenaphthene	NE			<0.014	<0.10	<0.070	<0.10		0.36	
Acenaphthylene	0.3			< 0.013	<0.10	<0.050	<0.10		<0.013	
Anthracene	1100000			<0.018	<0.10	< 0.093	<0.10		<0.018	
Benzo(a)anthracene	0.3			<0.030	<0.050	<0.020	<0.050		<0.030	
Benzo(a)pyrene	0.3			< 0.017	<0.10	<0.029	<0.10		<0.017	
Benzo(b)fluoranthene	0.3			<0.024	<0.050	< 0.032	<0.050		<0.024	
Benzo(ghi)perylene	NE			<0.038	<0.10	<0.027	<0.10		<0.038	
Benzo(k)fluoranthene	0.3			< 0.059	<0.10	< 0.039	<0.10		<0.059	
Chrysene	NE			< 0.073	<0.10	<0.024	<0.10		<0.073	
Dibenzo(a,h)anthracene	NE			<0.042	<0.10	< 0.032	<0.10		<0.042	
Fluoranthene	3700			< 0.033	<0.10	<0.041	<0.10		<0.033	
Fluorene	140000			<0.046	<0.10	<0.10	<0.10		0.060J	
Indeno(1,2,3-cd)pyrene	NE			<0.046	<0.10	< 0.031	<0.10		<0.046	
2-Methylnaphthalene	NE			<0.052	<0.20	< 0.075	<0.20		<0.052	
Naphthalene	NE			< 0.036	<0.10	< 0.042	<0.10		<0.036	
Phenanthrene	0.3			< 0.013	<0.050	< 0.013	<0.050		<0.013	
Pyrene	110000			< 0.036	<0.10	< 0.039	<0.10		<0.036	
EPH (ug/L)										
C9-C18 Aliphatics (FID)	770					<100				
C19-C36 Aliphatics (FID)	530					<100				
C11-C22 Aromatics	250					<100				
ETPH (mg/L)										
ETPH	NE			<0.060	<0.080		1.07	0.91	1.23	1.15
Total Metals (ug/L)										
Arsenic	4	<2.9	<2.9				<4.0		<2.9	
Lead	13	<1.7	<1.7				<5.0		<1.7	
Selenium	50	5.6J	<4.8				<10		<4.8	
Vanadium		6.4J	<2.8				<10		<2.8	
Zinc	123	<6.4U	<6.8U				<20		<3.6U	

**Notes:** SWPC = Connecticut Surface Water Protection Criteria.

SWPC for aliphatic and aromatic hydrocarbon ranges from July 2012 CTDEEP technical support document.

--- = Constituent not analyzed for.

NE = Not established

mg/L = milligrams per liter

ug/L = micrograms per liter

{Bold} exceeds least stringent applicable criteria

J = Estimated value based on validation.

Middletown Power LLC, Middletown, CT

		AOC08-SB1-MW1	AOC08-SB1-MW1	AOC08-SB1-MW1	AOC08-SB1-MW1	AOC09-SB1-MW1	AOC09-SB1-MW1	AOC09-SB1-MW1	AOC09-SB1-MW1
		12/13/2013	12/13/2013	5/6/2014	5/6/2014	7/10/2012	5/9/2013	12/13/2013	5/5/2014
CONSTITUENT	SWPC	Primary	Duplicate 1	Primary	Duplicate 1	Primary	Primary	Primary	Primary
SVOCs (ug/L)									
Acenaphthene	NE	2.3		0.1	<0.14		<0.014	<0.10	<0.070
Acenaphthylene	0.3	<0.10		<0.050	<0.10		<0.013	<0.10	<0.050
Anthracene	1100000	<0.10		<0.093	<0.19		<0.018	<0.10	<0.093
Benzo(a)anthracene	0.3	<0.051		<0.020	<0.040		<0.030	<0.050	<0.020
Benzo(a)pyrene	0.3	<0.10		<0.029	<0.059		<0.017	<0.10	<0.029
Benzo(b)fluoranthene	0.3	<0.051		<0.032	<0.064		<0.024	<0.050	<0.032
Benzo(ghi)perylene	NE	<0.10		<0.027	<0.055		<0.038	<0.10	<0.027
Benzo(k)fluoranthene	0.3	<0.10		<0.039	<0.079		<0.059	<0.10	<0.039
Chrysene	NE	<0.10		<0.024	<0.049		<0.073	<0.10	<0.024
Dibenzo(a,h)anthracene	NE	<0.10		<0.032	<0.065		<0.042	<0.10	<0.032
Fluoranthene	3700	<0.10		<0.041	<0.083		<0.033	<0.10	<0.041
Fluorene	140000	4.0		<0.10	<0.20		<0.046	<0.10	<0.10
Indeno(1,2,3-cd)pyrene	NE	<0.10		<0.031	<0.062		<0.046	<0.10	<0.031
2-Methylnaphthalene	NE	<0.20		<0.075			<0.052	<0.20	<0.075
Naphthalene	NE	0.71		<0.042	<0.23U		<0.075U	<0.10	<0.042
Phenanthrene	0.3	{0.70}		<0.013	<0.033U		<0.013	<0.050	<0.013
Pyrene	110000	0.26		<0.039	<0.078		<0.036	<0.10	<0.039
EPH (ug/L)									
C9-C18 Aliphatics (FID)	770			<100	143				<100
C19-C36 Aliphatics (FID)	530			109	134				<100
C11-C22 Aromatics	250			{287}	{461}				<100
ETPH (mg/L)									
ETPH	NE	3.79	3.31				<0.061	<0.080	
Total Metals (ug/L)									
Arsenic	4					<4.0		<2.9	<2.9
Lead	13					<5.0			
Selenium	50					<10			
Vanadium						<10			
Zinc	123					<20			

**Notes:** SWPC = Connecticut Surface Water Protection Criteria.

SWPC for aliphatic and aromatic hydrocarbon ranges from July 2012 CTDEEP technical support document.

--- = Constituent not analyzed for.

NE = Not established

mg/L = milligrams per liter

ug/L = micrograms per liter

{Bold} exceeds least stringent applicable criteria

J = Estimated value based on validation.

Middletown Power LLC, Middletown, CT

		AOC09-SB2-MW2	TW-10							
		7/10/2012	7/10/2012	5/9/2013	5/9/2013	12/13/2013	12/13/2013	5/5/2014	5/5/2014	7/9/2012
CONSTITUENT	SWPC	Primary	Duplicate 1	Primary						
SVOCs (ug/L)										
Acenaphthene	NE	<0.10	<0.10	<0.014	0.38	<0.10	<0.10	0.096J	0.12	
Acenaphthylene	0.3	<0.10	<0.10	<0.013	<0.014	<0.10	<0.10	<0.050	<0.050	
Anthracene	1100000	<0.10	<0.10	<0.018	<0.018	<0.10	<0.10	<0.093	<0.093	
Benzo(a)anthracene	0.3	<0.050	<0.050	<0.030	<0.031	<0.050	<0.050	<0.020	<0.020	
Benzo(a)pyrene	0.3	<0.10	<0.10	<0.017	<0.018	<0.10	<0.10	<0.029	<0.029	
Benzo(b)fluoranthene	0.3	<0.050	<0.050	<0.024	<0.024	<0.050	<0.050	<0.032	<0.032	
Benzo(ghi)perylene	NE	<0.10	<0.10	<0.038	<0.038	<0.10	<0.10	<0.027	<0.027	
Benzo(k)fluoranthene	0.3	<0.10	<0.10	<0.059	<0.060	<0.10	<0.10	<0.039	<0.039	
Chrysene	NE	<0.10	<0.10	<0.073	< 0.074	<0.10	<0.10	<0.024	<0.024	
Dibenzo(a,h)anthracene	NE	<0.10	<0.10	<0.042	<0.043	<0.10	<0.10	<0.032	<0.032	
Fluoranthene	3700	<0.10	<0.10	<0.033	<0.033	<0.10	<0.10	<0.041	<0.041	
Fluorene	140000	<0.10	<0.10	<0.046	0.53	<0.10	<0.10	0.16	0.22	
Indeno(1,2,3-cd)pyrene	NE	<0.10	<0.10	<0.046	<0.047	<0.10	<0.10	<0.031	<0.031	
2-Methylnaphthalene	NE	<0.20	<0.20	<0.052	<0.053	<0.20	<0.20	<0.075	<0.075	
Naphthalene	NE	<0.10	<0.10	<0.036	<0.037	<0.10	<0.10	<0.057U	<0.054U	
Phenanthrene	0.3	<0.050	<0.050	<0.013	<0.013	<0.050	<0.050	<0.019U	<0.013	
Pyrene	110000	<0.10	<0.10	<0.036	<0.036	<0.10	<0.10	<0.039	<0.039	
EPH (ug/L)										
C9-C18 Aliphatics (FID)	770							<100		
C19-C36 Aliphatics (FID)	530							<100		
C11-C22 Aromatics	250							150		
ETPH (mg/L)										
ETPH	NE	0.27		0.332		<0.0877U				<0.080
Total Metals (ug/L)										
Arsenic	4	<4.0		{7.3}		<2.9		<2.9		<4.0
Lead	13	<5.0		<1.7		<1.7		<1.7		<5.0
Selenium	50	<10		<4.8		<4.8		<4.8		<10
Vanadium		<10		<2.8		<2.8		<2.8		<10
Zinc	123	<20		<20.4U		{377}		81.4		<20

**Notes:** SWPC = Connecticut Surface Water Protection Criteria.

SWPC for aliphatic and aromatic hydrocarbon ranges from July 2012 CTDEEP technical support document.

--- = Constituent not analyzed for.

NE = Not established

mg/L = milligrams per liter

ug/L = micrograms per liter

{Bold} exceeds least stringent applicable criteria

J = Estimated value based on validation.

Middletown Power LLC, Middletown, CT

		TW-10	TW-10	TW-10	TW-14	TW-14	TW-14	TW-14	TW-17D	TW-17D	TW-17D	TW-17D	TW-18	TW-18
		5/10/2013	12/12/2013	5/6/2014	7/9/2012	5/10/2013	12/12/2013	5/6/2014	7/9/2012	5/10/2013	12/12/2013	5/5/2014	7/9/2012	7/9/2012
CONSTITUENT	SWPC	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Duplicate 1
SVOCs (ug/L)														
Acenaphthene	NE													
Acenaphthylene	0.3													
Anthracene	1100000													
Benzo(a)anthracene	0.3													
Benzo(a)pyrene	0.3													
Benzo(b)fluoranthene	0.3													
Benzo(ghi)perylene	NE													
Benzo(k)fluoranthene	0.3													
Chrysene	NE													
Dibenzo(a,h)anthracene	NE													
Fluoranthene	3700													
Fluorene	140000													
Indeno(1,2,3-cd)pyrene	NE													
2-Methylnaphthalene	NE													
Naphthalene	NE													
Phenanthrene	0.3													
Pyrene	110000													
EPH (ug/L)														
C9-C18 Aliphatics (FID)	770													
C19-C36 Aliphatics (FID)	530													
C11-C22 Aromatics	250													
ETPH (mg/L)														
ETPH	NE	<0.060			0.0956									
Total Metals (ug/L)														
Arsenic	4	<2.9	<2.9	{4.6}	<4.0	<2.9	<2.9	<2.9	<4.0	<2.9	<2.9	<2.9	4	{5.0}
Lead	13	<1.7	<1.7	<1.7	<5.0	<1.7	<1.7	<1.7	<5.0	<1.7	<1.7	<1.7	<5.0	<5.0
Selenium	50	<4.8	<4.8	<4.8	<10	<4.8	<4.8	<4.8	38.3	29.7	{57.1}	49.1	<10	<10
Vanadium		<2.8	7.2J	7.5J	<10	<2.8	5.0J	4.6J	410	408	308	400	39.3	59.6
Zinc	123	4.3J	<7.8U	<5.6U	<20	16.7J	<11.8U	<6.8U	<20	11.7J	<10.9U	<6.3U	20.9	21.5

**Notes:** SWPC = Connecticut Surface Water Protection Criteria.

SWPC for aliphatic and aromatic hydrocarbon ranges from July 2012 CTDEEP technical support document.

--- = Constituent not analyzed for.

NE = Not established

mg/L = milligrams per liter

ug/L = micrograms per liter

{Bold} exceeds least stringent applicable criteria

J = Estimated value based on validation.

Middletown Power LLC, Middletown, CT

		TW-18	TW-18	TW-18	TW-18	TW-18	TW-18	TW-21D	TW-21D	TW-21D	TW-21D
		5/9/2013	5/9/2013	12/12/2013	12/12/2013	5/6/2014	5/6/2014	7/9/2012	5/10/2013	12/12/2013	5/6/2014
CONSTITUENT	SWPC	Primary	Duplicate 1	Primary	Duplicate 1	Primary	Duplicate 1	Primary	Primary	Primary	Primary
SVOCs (ug/L)		•	•					,		,	•
Acenaphthene	NE										
Acenaphthylene	0.3										
Anthracene	1100000										
Benzo(a)anthracene	0.3										
Benzo(a)pyrene	0.3										
Benzo(b)fluoranthene	0.3										
Benzo(ghi)perylene	NE										
Benzo(k)fluoranthene	0.3										
Chrysene	NE										
Dibenzo(a,h)anthracene	NE										
Fluoranthene	3700										
Fluorene	140000										
Indeno(1,2,3-cd)pyrene	NE										
2-Methylnaphthalene	NE										
Naphthalene	NE										
Phenanthrene	0.3										
Pyrene	110000										
EPH (ug/L)											
C9-C18 Aliphatics (FID)	770										
C19-C36 Aliphatics (FID)	530										
C11-C22 Aromatics	250										
ETPH (mg/L)											
ETPH	NE										
Total Metals (ug/L)											
Arsenic	4	<2.9	<2.9	<2.9	<2.9	{11.0}	{12.5}	<4.0	<2.9	<2.9	<2.9
Lead	13	<1.7	<1.7	<1.7	<1.7	2.9J	2.9J	<5.0	<1.7	<1.7	<1.7
Selenium	50	<4.8	<4.8	<4.8	<4.8	{53.7}	{56.7}	24.7	26	43.1	32.4
Vanadium		11	11.8	10.6	10.2	161	167	10.4	17.3	12.3	<2.8
Zinc	123	<6.7U	<10.2U	<9.1U	<5.6U	<6.0U	<5.7U	<20	9.1J	<6.7U	<5.4U

**Notes:** SWPC = Connecticut Surface Water Protection Criteria.

SWPC for aliphatic and aromatic hydrocarbon ranges from July 2012 CTDEEP technical support document.

--- = Constituent not analyzed for.

NE = Not established

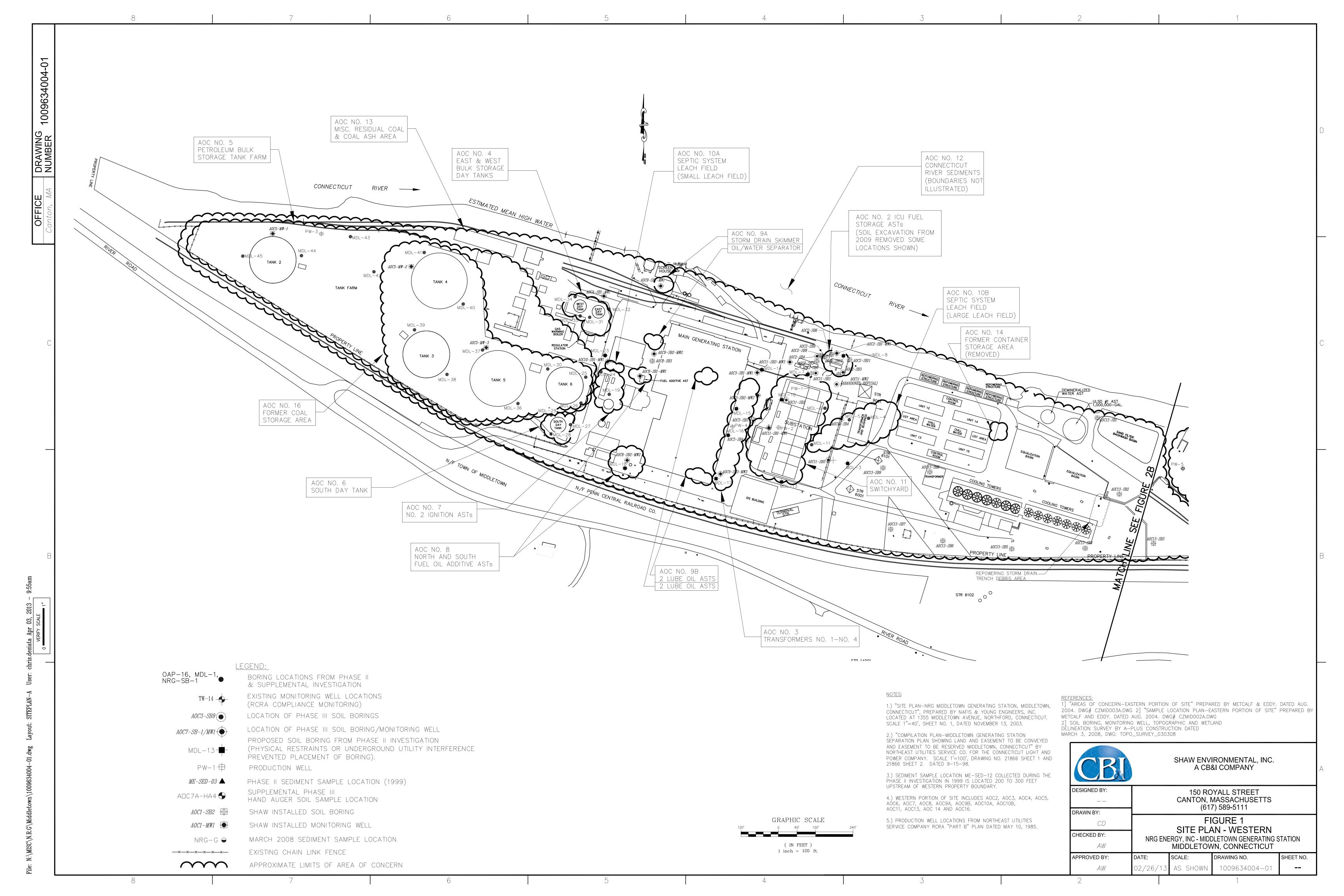
mg/L = milligrams per liter

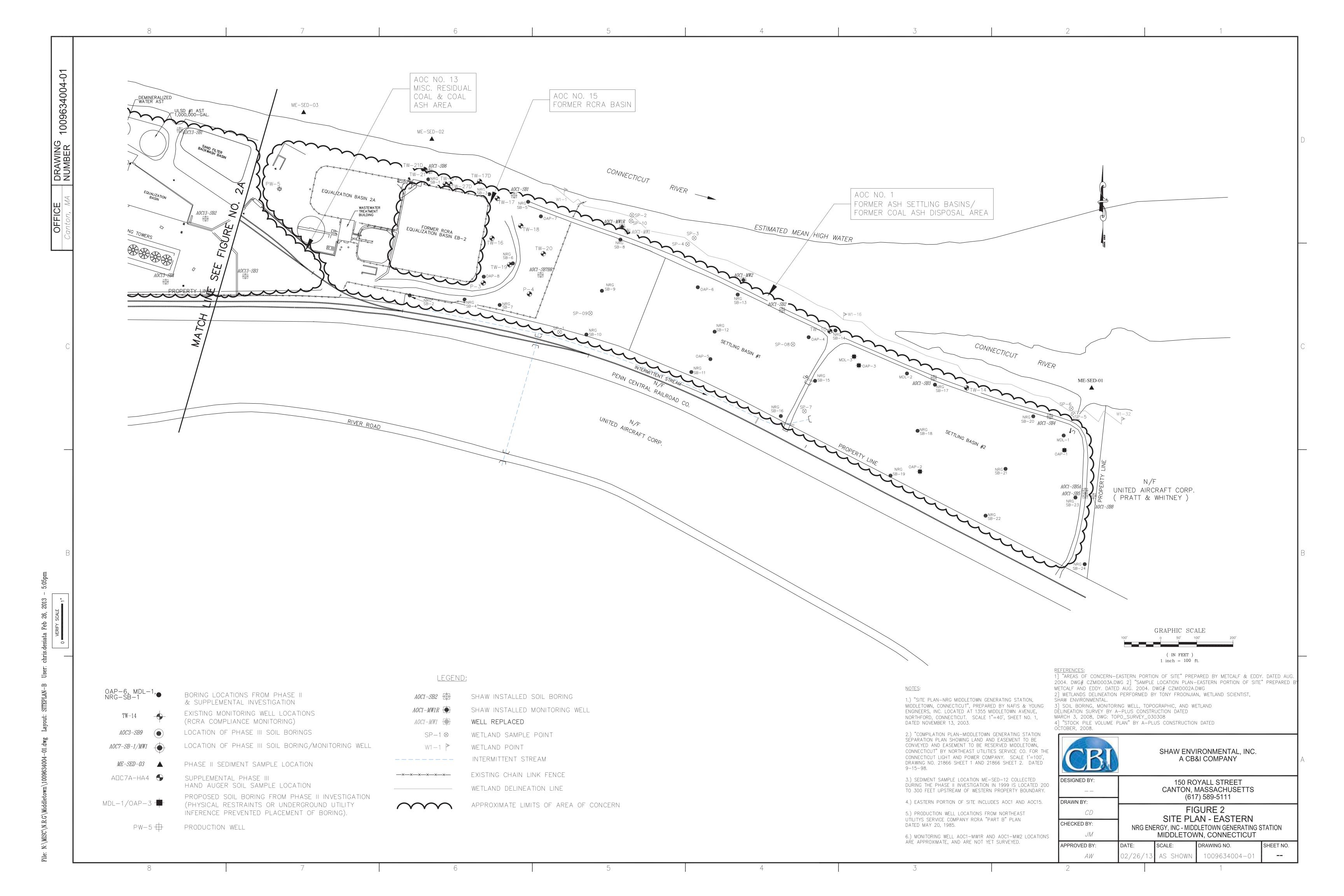
ug/L = micrograms per liter

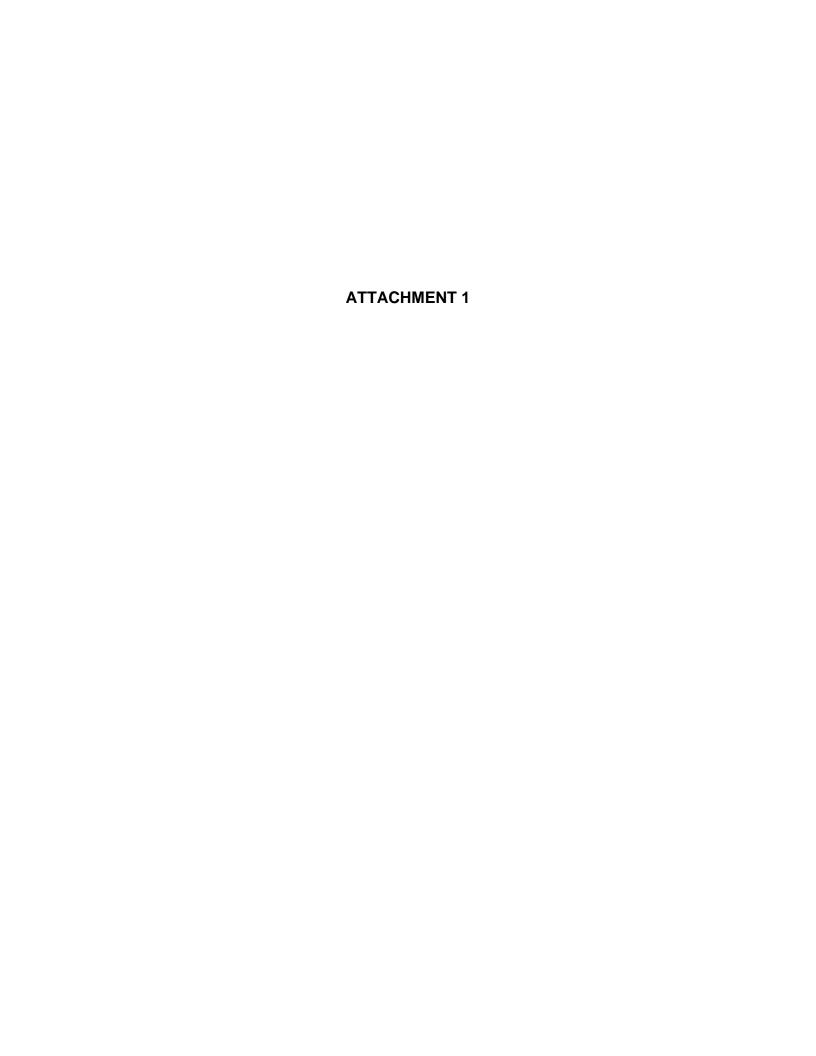
{Bold} exceeds least stringent applicable criteria

J = Estimated value based on validation.









#### **Data Validation Worksheet**

Project Name:

NRG Middletown, CT

Job Number:

1009634026

Date: 5/5/2014

Analyte Group:

Extractable Total Petroleum Hydrocarbons

Metals

Analytical Method:

**EPA 8270C** CT EPH EPA 6010C

Completed Reasonable Confidence Protocols Certification Form included:

Yes

Were all Reasonable Confidence Protocol QA/QC Criteria Followed?

Yes

\*Questions 4,6 and 7 were all answered No

Accutest laboratory certifies that all analysis were performed within method specifications and recommends that the report is to be used in its entirety:

Yes

Laboratory ID No.: MC30345

Chain of Custody: Included in Data Package?

Is it Complete? Yes

Allowable Holding Time: All Holding times were met.

Method	Extraction	Analysis	Collection Date	Extraction date	Analyzed Date
			5/5, 5/6/2014	5/9, 5/12, 5/14/2014	5/9, 5/12, 5/14,
SVOC/8270C	7-Days	7 days (water)			5/16/2014
EPH/CT EPH	7-Days	40 Days (water)	5/5, 5/6/2015	5/9, 5/12, 5/14/2015	5/9, 5/12, 5/14,
					5/16/2015
Metals/6010C	NA	6 months	5/5, 5/6/2016	NA	5/9, 5/12, 5/14,
					5/16/2016

Sample Collection Date:

5/5/2014

Sample temperature above QC limit:

No (1.2°)

Surrogate Recovery

Surrogate Allowable Ranges for GC/MS SVOCs:

Are all % recoveries within the allowable range ? Yes

If No, List sample ID where range was exceeded: NA

Surrogate Allowable Ranges for GC SVOCs:

Are all % recoveries within the allowable range? No

If No, List sample ID where range was exceeded: Sample(s) MC30345-8, OP38029-BS, OP38029-BSD, OP38029-MB have surrogates outside control limits. Surrogate standard not added. EPH extract analyzed. No qualification necessary

#### **Laboratory Control Samples**

#### LCS/LCSD

Are all laboratory control sample recoveries within the QC limits? Yes

If No, list sample ID and compound where limit was exceeded: NA

#### MS/MSD

Are all MS/MSD sample recoveries within the QC limits? Yes If No, list sample ID and compound where limit was exceeded: NA

Equipment Field Blank ID:

NA NA

Trip Blank iD:

All within range

Method Blank:

Were any compounds identified in the method blank, field blank or trip blank above detection limits? No

If so, list Sample ID/Compound/Concentration/Unit NA

Trace amounts of naphthalene were detected at 0.060 ug/L (5X = 0.3) and trace amount of zinc at 6.8 ug/L (5X = 34) were detected in EB-1. Qualify these compounds where results are < 5X the amount found in the blank as "U" for associated samples.

Sample Analysis Notes by Method:

#### SW846 8270C

Sample(s) MC30345-3 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.

Trace amounts of phenanthrene (0.047 ug/L/ 5X = 0.22) and naphthalene (0.27 ug/L/ 5X = 1.35) were detected in OP38029-MB method blank.

Trace amounts of phenanthrene (0.019 ug/L/ 5X = 0.145) was detected in OP38020-MB method blank. Qualify these compounds where results are < 5X the amount found in the blank as "U" for associated samples.

#### **CT-ETPH 7/06**

None

#### SW846 6010C

RPD(s) for Serial Dilution for Selenium, Zinc are outside control limits for sample MP23021-SD1. Percent difference

No qualification necessary

RPD(s) for Serial Dilution for Setenium, Zinc are obtained united to the minute of Setenium acceptable due to low initial sample concentration (< 50 times IDL).

No qualification necessary

RPD(s) for Serial Dilution for Setenium, Zinc are outside control limits for sample MP23028-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

No qualification necessary

RPD(s) for Serial Dilution for Vanadium, Zinc are outside control limits for sample MP23046-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

No qualification necessary

Sample ID correction

Reviewed By: Kim Napier

Qualify results < RL J, unless "U" qualified due to blank contamination. No other qualification necessary.

Ву

MR

Client Sample ID: AOC9-SB2-MW2

Lab Sample ID:

MC30345-3

Matrix:

AQ - Ground Water

DF

1

Date Sampled:

05/05/14

SW846 8270D BY SIM SW846 3510C

Date Received:

05/06/14

Method: Project:

NRG Middletown, 1866 River Road, Middletown, CT

Percent Solids: n/a

Analyzed 05/20/14

Prep Batch Prep Date 05/09/14 OP38020

Analytical Batch MSI3327

Run #1 Run #2

**Initial Volume** 

File ID

990 ml

I89385.D

Run #1

Final Volume 1.0 ml

Run #2

**BN PAH List** 

CAS No.	Compound	Result	RL	MDL	Units	Q				
83-32-9	Acenaphthene	0.096	0.10	0.070	ug/l	J	1			
208-96-8	Acenaphthylene	ND	0.10	0.050	ug/l	-	4			
120-12-7	Anthracene	ND	0.10	0.093	ug/l					
56-55-3	Benzo(a)anthracene	ND	0.051	0.020	ug/l					
50-32-8	Вепzо(а)ругепе	ND	0,10	0.029	ug/l					
205-99-2	Benzo(b)fluoranthene	ND	0.051	0.032	ug/i					
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.027	ug/l					
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.039	ug/l					
218-01-9	Chrysene	ND	0.10	0.024	ug/l					
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.032	ug/l					
206-44-0	Fluoranthene	ND	0.10	0.041	ug/l					
86-73-7	Fluorene	0.16	0.10	0.10	ug/l					
193-39-5	Indeno(1,2,3-cd)pyrene	ND_	0.10	0.031	ug/l					
91-57-6	2-Methylnaphthalene	ND	0.20	0.075	ug/l					
91-20-3	Naphthalene	0.057	0.10	0.042	ug/l	J	u			
85-01-8	Phenanthrene	0.019	0.051	0.013	ug/l		f A			
129-00-0	Pyrene	ND	0.10	0.039	ug/l	_				
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its					
4165-60-0	Nitrobenzene-d5	54%	Š	30-1	30%					
321-60-8	2-Fluorobiphenyl		30-1	30%		J U				
1718-51-0	Terphenyl-d14	65%	7	30-1	30%					

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Client Sample ID: AOC9-SB2-MW2DUP

Lab Sample ID:

MC30345-4

Matrix:

AQ - Ground Water

SW846 8270D BY SIM SW846 3510C

Date Sampled: Date Received:

05/05/14 05/06/14

Percent Solids: n/a

Method: Project:

NRG Middletown, 1866 River Road, Middletown, CT

Analytical Batch

Run #1

File ID 189386.D DF Analyzed 05/20/14 1

Ву MR Prep Date 05/09/14

Prep Batch OP38020

MSI3327

Run #2

Initial Volume Final Volume 990 ml

1.0 ml

Run #1 Run #2

**BN PAH List** 

CAS No.	Compound	Result	RL	MDL	Units	Q	
83-32-9	Acenaphthene	0.12	0.10	0.070	ug/l		
208-96-8	Acenaphthylene	ND	0.10	0.050	· ug/i		
120-12-7	Anthracene	ND	0.10	0.093	ug/l		
56-55-3	Benzo(a)anthracene	ND	0.051	0.020	ug/l		
50-32-8	Benzo(a)pyrene	ND	0.10	0.029	ug/l		
205-99-2	Benzo(b)fluoranthene	ND	0.051	0.032	ug/l		
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.027	ug/l		
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.039	ug/l		
218-01-9	Chrysene	ND	0.10	0.024	ug/l		
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.032	ug/l		
206-44-0	Fluoranthene	ND	0.10	0.041	ug/l		
86-73-7	Fluorene	0.22	0.10	0.10	ug/l		
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.031	ug/l		
91-57-6	2-Methylnaphthalene	ND	0.20	0.075	ug/l		
91-20-3	Naphthalene	0.054	0.10	0.042	ug/l	J	u
85-01-8	Phenanthrene	ND	0.051	0.013	ug/l		
129-00-0	Pyrene	ND	0.10	0.039	ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its		
4165-60-0	Nitrobenzene-d5	54%		30-1	30%		

52%

69%

ND = Not detected

321-60-8 1718-51-0

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

2-Fluorobiphenyl

Terphenyl-d14

J = Indicates an estimated value

30-130%

30-130%

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Client Sample ID: AOC2-SB1-MW1

Lab Sample ID:

MC30345-5

AQ - Ground Water

Date Sampled:

05/05/14

Date Received:

05/06/14

Percent Solids: n/a

Project:

Matrix:

NRG Middletown, 1866 River Road, Middletown, CT

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.9 U	4.0	2.9	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	1.7 U	5.0	1.7	ug/I	1.	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	4.8 U	10	4.8	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	2.8 U	10	2.8	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	6.8 B	L 20	0.50	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17129

(2) Prep QC Batch: MP23021

RL = Reporting Limit

MDL = Method Detection Limit

U = Indicates a result < MDL

B = Indicates a result > = MDL but < RL



Client Sample ID: TW-17D

Lab Sample ID: MC30345-6

AQ - Ground Water

Date Sampled: 05/05/14 Date Received: 05/06/14

Percent Solids: n/a

Project:

Matrix:

NRG Middletown, 1866 River Road, Middletown, CT

#### **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic Lead Selenium Vanadium	2.9 U 1.7 U 49.1 400	5.0 10 10	2.9 1.7 4.8 2.8	ug/l ug/l ug/l ug/l	1 1 1 1	05/09/14 05/09/14	05/09/14 EAL 05/09/14 EAL 05/09/14 EAL 05/09/14 EAL	SW846 6010C <sup>1</sup> SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup>
Zinc	6.3 B ()	20	0.50	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17129

(2) Prep QC Batch: MP23021

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL

B = Indicates a result > = MDL but < RL



## Report of Analysis

Вy

MR

Client Sample ID: AOC8-SB1-MW1DUP

Lab Sample ID:

MC30345-8

Date Sampled:

05/06/14

Matrix:

AQ - Ground Water

DF

1

Date Received:

Prep Date

05/09/14

05/06/14

Method:

SW846 8270D BY SIM SW846 3510C

Percent Solids:

n/a

Project:

NRG Middletown, 1866 River Road, Middletown, CT

Analyzed

05/19/14

Prep Batch OP38029

Analytical Batch MSI3325

Run #1 Run #2

Initial Volume

File ID

189333.D

Final Volume

Run #1 980 ml 2.0 ml

Run #2

#### **BN PAH List**

CAS No.	Compound	Result	RL	MDL	Units	Q	
83-32-9	Acenaphthene	ND	0.20	0.14	ug/l		
208-96-8	Acenaphthylene	ND	0.20	0.10	ug/l		
120-12-7	Anthracene	ND	0.20	0.19	ug/l		
56-55-3	Benzo(a)anthracene	ND-	0.10	0.040	ug/l		
50-32-8	Benzo(a)pyrene	ND	0.20	0.059	ug/l		
205-99-2	Benzo(b)fluoranthene	ND	0.10	0.064	ug/I		
191-24-2	Benzo(g,h,i)perylene	ND	0.20	0.055	ug/l		
207-08-9	Benzo(k)fluoranthene	ND	0.20	0.079	ug/l		
218-01-9	Chrysene	ND	0.20	0.049	ug/l		
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	0.065	ug/l		
206-44-0	Fluoranthene	ND	0.20	0.083	ug/l		
86-73-7	Fluorene	ND	0.20	0.20	ug/l		
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	0.062	ug/l		
91-20-3	Naphthalene	0.23	0.20	0.084	ug/l	В	V
85-01-8	Phenanthrene	0.033	0.10	0.026	ug/l	JB	u
129-00-0	Pyrene	ND	0.20	0.078	ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its		
4165-60-0	Nitrobenzene-d5	0% a		30-1	30%		
321-60-8	2-Fluorobiphenyl	93%		30-1	30%		
1718-51-0	Terphenyl-d14	0% a		30-13	30%		

(a) Surrogate standard not added. EPH extract analyzed.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

 $N \, = \, Indicates \, presumptive \, evidence \, of \, a \, compound \,$ 



Client Sample ID: TW-21D Lab Sample ID:

MC30345-9

Date Sampled:

05/06/14

Matrix:

AQ - Ground Water

Percent Solids: n/a

Date Received: 05/06/14

Project:

NRG Middletown, 1866 River Road, Middletown, CT

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.9 U	4.0	2.9	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	1.7 U	5.0	1.7	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	32.4	10	4.8	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	2.8 U	10	2.8	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	5.4 B	20	0.50	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17129



MC30345-10

Matrix:

AQ - Ground Water

Date Sampled:

05/06/14

Percent Solids: n/a

Date Received: 05/08/14

Project:

NRG Middletown, 1866 River Road, Middletown, CT

**Total Metals Analysis** 

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic Lead Selenium Vanadium Zinc	11.0 2.9 B J 53.7 161 6.0 B U	5.0 10 10	2.9 1.7 4.8 2.8 0.50	ug/l ug/l ug/l ug/l ug/l	1 1 1 1	05/14/14 05/14/14 05/14/14	05/14/14 EAL 05/14/14 EAL 05/14/14 EAL 05/14/14 EAL 05/14/14 EAL	SW846 6010C <sup>1</sup> SW846 6010C <sup>1</sup> SW846 6010C <sup>1</sup> SW846 6010C <sup>1</sup> SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17148



Client Sample ID: TW-18DUP Lab Sample ID:

MC30345-11

Date Sampled:

05/06/14

Matrix:

AQ - Ground Water

Percent Solids: n/a

Date Received: 05/08/14

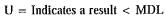
Project:

NRG Middletown, 1866 River Road, Middletown, CT

#### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic Lead Selenium Vanadium Zinc	12.5 2.9 B ゴ 56.7 167 5.7 B 从	5.0 10 10	2.9 1.7 4.8 2.8 0.50	ug/i ug/i ug/i ug/i ug/i	1 1 1 1	05/14/14 05/14/14 05/14/14	05/14/14 EAL 05/14/14 EAL 05/14/14 EAL 05/14/14 EAL 05/14/14 EAL	SW846 6010C <sup>1</sup> SW846 6010C <sup>1</sup> SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17148



Lab Sample ID:

Client Sample ID: AOC1-MW1R MC30345-12

Date Sampled: Date Received: 05/06/14

Matrix:

AQ - Ground Water

Percent Solids: n/a

05/08/14

Project:

NRG Middletown, 1866 River Road, Middletown, CT

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic Lead Selenium Vanadium Zinc	2.9 U 1.7 U 27.0 2.8 U 5.3 B 从	5.0 10 10	2.9 1.7 4.8 2.8 0.50	ug/l ug/l ug/l ug/l ug/l	1 1 1 1	05/14/14 05/14/14 05/14/14	05/14/14 EAL 05/14/14 EAL 05/14/14 EAL 05/14/14 EAL	SW846 6010C <sup>1</sup> SW846 6010C <sup>1</sup> SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup> SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17148



## Report of Analysis

Client Sample ID: TW-14

Lab Sample ID:

MC30345-15

Matrix:

AQ - Ground Water

Date Sampled:

05/06/14

Date Received: 05/08/14

Percent Solids: n/a

Project:

NRG Middletown, 1866 River Road, Middletown, CT

#### **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.9 U 1.7 U		2.9	ug/l	1			SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead			1.7	ug/I	1		05/12/14 EAL		SW846 3010A <sup>2</sup>
Selenium	4.8 U		4.8	ug/l	1	05/12/14	05/12/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	4.6 B J		2.8	ug/l	1	05/12/14	05/12/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	6.8 B	20	0.50	ug/l	1	05/12/14	05/12/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17135





## Report of Analysis

Client Sample ID: TW-10

Lab Sample ID:

MC30345-16

AQ - Ground Water

Date Sampled: 05/06/14 Date Received: 05/08/14

Percent Solids: n/a

Project:

Matrix:

NRG Middletown, 1866 River Road, Middletown, CT

#### Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.6	4.0	2.9	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	1.7 U	5.0	1.7	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	4.8 U		4.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	7.5 B J	10	2.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	5.6 B U	20	0.50	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17148







05/20/14



## **Technical Report for**

**Shaw Environmental & Infrastructure** 

NRG Middletown, 1866 River Road, Middletown, CT

1009634026

Accutest Job Number: MC30345

Sampling Dates: 05/05/14 - 05/06/14

### Report to:

CB&I 150 Royall Street Cantonton, MA 02021 andrew.walker@shawgrp.com

ATTN: Andrew Walker

Total number of pages in report: 77



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Frank DAgostino 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) DOD ELAP (L-A-B L2235)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.

## **Sections:**

## **Table of Contents**

-1-

Section 1: Sample Summary	3
Section 2: Case Narrative/Conformance Summary	5
Section 3: Summary of Hits	
Section 4: Sample Results	
<b>4.1:</b> MC30345-1: AOC5-MW1	11
<b>4.2:</b> MC30345-2: AOC9-SB1-MW1	
<b>4.3:</b> MC30345-3: AOC9-SB2-MW2	
<b>4.4:</b> MC30345-4: AOC9-SB2-MW2DUP	19
<b>4.5:</b> MC30345-5: AOC2-SB1-MW1	20
<b>4.6:</b> MC30345-6: TW-17D	
<b>4.7:</b> MC30345-7: AOC8-SB1-MW1	22
<b>4.8:</b> MC30345-8: AOC8-SB1-MW1DUP	
<b>4.9:</b> MC30345-9: TW-21D	
<b>4.10:</b> MC30345-10: TW-18	
<b>4.11:</b> MC30345-11: TW-18DUP	
<b>4.12:</b> MC30345-12: AOC1-MW1R	
<b>4.13:</b> MC30345-13: AOC1-MW2	30
<b>4.14:</b> MC30345-14: EB-1	
<b>4.15:</b> MC30345-15: TW-14	34
<b>4.16:</b> MC30345-16: TW-10	35
Section 5: Misc. Forms	<b>36</b>
<b>5.1:</b> Chain of Custody	37
5.2: RCP Form	41
<b>5.3:</b> Sample Tracking Chronicle	42
Section 6: GC/MS Semi-volatiles - QC Data Summaries	45
6.1: Method Blank Summary	46
6.2: Blank Spike/Blank Spike Duplicate Summary	48
6.3: Internal Standard Area Summaries	
6.4: Surrogate Recovery Summaries	54
Section 7: GC Semi-volatiles - QC Data Summaries	55
7.1: Method Blank Summary	56
7.2: Blank Spike/Blank Spike Duplicate Summary	57
7.3: Surrogate Recovery Summaries	58
Section 8: Metals Analysis - QC Data Summaries	
<b>8.1:</b> Prep QC MP23021: As,Pb,Se,V,Zn	60
<b>8.2:</b> Prep QC MP23028: As,Pb,Se,V,Zn	66
8.3: Prep OC MP23046: As Ph Se V Zn	72



N

ယ

G

**U**,







## **Sample Summary**

Job No:

MC30345

Shaw Environmental & Infrastructure

NRG Middletown, 1866 River Road, Middletown, CT Project No: 1009634026

Sample Number	Collected Date	Time By	Received	Matri Code		Client Sample ID
MC30345-1	05/05/14	09:50 PL	05/06/14	AQ	Ground Water	AOC5-MW1
MC30345-2	05/05/14	12:10 PL	05/06/14	AQ	Ground Water	AOC9-SB1-MW1
MC30345-3	05/05/14	14:25 PL	05/06/14	AQ	Ground Water	AOC9-SB2-MW2
MC30345-4	05/05/14	14:25 PL	05/06/14	AQ	Ground Water	AOC9-SB2-MW2DUP
MC30345-5	05/05/14	17:00 PL	05/06/14	AQ	Ground Water	AOC2-SB1-MW1
MC30345-6	05/05/14	18:45 PL	05/06/14	AQ	Ground Water	TW-17D
MC30345-7	05/06/14	08:20 PL	05/06/14	AQ	Ground Water	AOC8-SB1-MW1
MC30345-8	05/06/14	08:20 PL	05/06/14	AQ	Ground Water	AOC8-SB1-MW1DUP
MC30345-9	05/06/14	09:45 PL	05/06/14	AQ	Ground Water	TW-21D
MC30345-10	05/06/14	10:55 PL	05/08/14	AQ	Ground Water	TW-18
MC30345-11	05/06/14	10:55 PL	05/08/14	AQ	Ground Water	TW-18DUP
MC30345-12	05/06/14	12:25 PL	05/08/14	AQ	Ground Water	AOC1-MW1R
MC30345-13	05/06/14	14:20 PL	05/08/14	AQ	Ground Water	AOC1-MW2





# Sample Summary (continued)

Shaw Environmental & Infrastructure

Job No: MC30345

NRG Middletown, 1866 River Road, Middletown, CT Project No: 1009634026

Sample Number	Collected Date	Time By	Received	Matr Code		Client Sample ID
MC30345-14	05/06/14	14:35 PL	05/08/14	AQ	Equipment Blank	EB-1
MC30345-15	05/06/14	15:35 PL	05/08/14	AQ	Ground Water	TW-14
MC30345-16	05/06/14	17:25 PL	05/08/14	AQ	Ground Water	TW-10





### SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Shaw Environmental & Infrastructure Job No MC30345

Site: NRG Middletown, 1866 River Road, Middletown, CT Report Date 5/20/2014 5:24:06 PM

16 Sample(s) were collected on between 05/05/2014 and 05/06/2014 and were received at Accutest between 05/06/2014 and 05/08/2014 properly preserved, at 1.2 Deg. C and intact. These Samples received an Accutest job number of MC30345. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Extractables by GCMS By Method SW846 8270D BY SIM

Matrix: AQ Batch ID: OP38020

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Only PAHs requested.
- Sample(s) MC30345-3 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.

Matrix: AQ Batch ID: OP38029

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Only PAHs requested.
- Sample(s) MC30345-8 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank
- Sample(s) MC30345-8, OP38029-BS, OP38029-BSD, OP38029-MB have surrogates outside control limits. Surrogate standard not added. EPH extract analyzed.

### Extractables by GC By Method MADEP EPH REV 1.1

Matrix: AQ Batch ID: OP38027

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Only range reported.



## Metals By Method SW846 6010C

Matrix: AQ Batch ID: MP23021

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC30383-7SDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Selenium, Zinc are outside control limits for sample MP23021-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).</p>
- Only selected metals requested.

Matrix: AQ

Batch ID: MP23028

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC30445-10SDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Selenium, Zinc are outside control limits for sample MP23028-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).</p>
- Only selected metals requested.

Matrix: AQ

Batch ID: MP23046

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC30328-1FSDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Vanadium, Zinc are outside control limits for sample MP23046-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- Only selected metals requested.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report (MC30345).

6 of 77
ACCUTEST

MC30345

LABORATORIES

**Summary of Hits Job Number:** MC30345

Account: Shaw Environmental & Infrastructure

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

**Collected:** 05/05/14 thru 05/06/14

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
MC30345-1	AOC5-MW1					
No hits reported	in this sample.					
MC30345-2	AOC9-SB1-MW1					
No hits reported	in this sample.					
MC30345-3	AOC9-SB2-MW2					
Acenaphthene		0.096 J	0.10	0.070	ug/l	SW846 8270D BY SIM
Fluorene		0.16	0.10	0.10	ug/l	SW846 8270D BY SIM
Naphthalene		0.057 J	0.10	0.042	ug/l	SW846 8270D BY SIM
Phenanthrene		0.019 JB	0.051	0.013	ug/l	SW846 8270D BY SIM
C11-C22 Aroma	tics (Unadj.)	150	100	100	ug/l	MADEP EPH REV 1.1
C11-C22 Aroma	tics	150	100	100	ug/l	MADEP EPH REV 1.1
Zinc		81.4	20	0.50	ug/l	SW846 6010C

Acenaphthene Fluorene Naphthalene Phenanthrene C11-C22 Aromatics (UC11-C22 Aromatics Zinc	Unadj.)	0.096 J 0.16 0.057 J 0.019 JB 150 150 81.4	0.10 0.10 0.10 0.051 100 100 20	0.070 0.10 0.042 0.013 100 100 0.50	ug/l ug/l ug/l ug/l ug/l ug/l	SW846 8270D BY SIM SW846 8270D BY SIM SW846 8270D BY SIM SW846 8270D BY SIM MADEP EPH REV 1.1 MADEP EPH REV 1.1 SW846 6010C
MC30345-4 AO	C9-SB2-MW2D	OUP				
Acenaphthene Fluorene Naphthalene		0.12 0.22 0.054 J	0.10 0.10 0.10	0.070 0.10 0.042	ug/l ug/l ug/l	SW846 8270D BY SIM SW846 8270D BY SIM SW846 8270D BY SIM
MC30345-5 AO	C2-SB1-MW1					
Zinc		6.8 B	20	0.50	ug/l	SW846 6010C
MC30345-6 TW	-17D					
Selenium Vanadium Zinc		49.1 400 6.3 B	10 10 20	4.8 2.8 0.50	ug/l ug/l ug/l	SW846 6010C SW846 6010C SW846 6010C
MC30345-7 AO	C8-SB1-MW1					
Acenaphthene C11-C22 Aromatics (Unadj.) C19-C36 Aliphatics C11-C22 Aromatics		0.10 287 109 287	0.10 100 100 100	0.070 100 100 100	ug/l ug/l ug/l ug/l	SW846 8270D BY SIM MADEP EPH REV 1.1 MADEP EPH REV 1.1 MADEP EPH REV 1.1
MC30345-8 AO	C8-SB1-MW1D	OUP				
Naphthalene Phenanthrene		0.23 B 0.033 JB	0.20 0.10	0.084 0.026	ug/l ug/l	SW846 8270D BY SIM SW846 8270D BY SIM



**Summary of Hits Job Number:** MC30345

Account: Shaw Environmental & Infrastructure

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

**Collected:** 05/05/14 thru 05/06/14

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
C11-C22 Aromatics (Unadj.) C9-C18 Aliphatics C19-C36 Aliphatics C11-C22 Aromatics		461 143 134 461	100 100 100 100	100 100 100 100	ug/l ug/l ug/l ug/l	MADEP EPH REV 1.1 MADEP EPH REV 1.1 MADEP EPH REV 1.1 MADEP EPH REV 1.1
MC30345-9	TW-21D					
Selenium Zinc		32.4 5.4 B	10 20	4.8 0.50	ug/l ug/l	SW846 6010C SW846 6010C
MC30345-10	TW-18					
Arsenic Lead Selenium Vanadium Zinc		11.0 2.9 B 53.7 161 6.0 B	4.0 5.0 10 10 20	2.9 1.7 4.8 2.8 0.50	ug/l ug/l ug/l ug/l ug/l	SW846 6010C SW846 6010C SW846 6010C SW846 6010C SW846 6010C
MC30345-11	TW-18DUP					
Arsenic Lead Selenium Vanadium Zinc		12.5 2.9 B 56.7 167 5.7 B	4.0 5.0 10 10 20	2.9 1.7 4.8 2.8 0.50	ug/l ug/l ug/l ug/l ug/l	SW846 6010C SW846 6010C SW846 6010C SW846 6010C SW846 6010C
MC30345-12	AOC1-MW1R					
Selenium Zinc		27.0 5.3 B	10 20	4.8 0.50	ug/l ug/l	SW846 6010C SW846 6010C
MC30345-13	AOC1-MW2					
Zinc		65.1	20	0.50	ug/l	SW846 6010C
MC30345-14	EB-1					
Naphthalene Zinc		0.060 J 6.8 B	0.10 20	0.042 0.50	ug/l ug/l	SW846 8270D BY SIM SW846 6010C
MC30345-15	TW-14					
Vanadium Zinc		4.6 B 6.8 B	10 20	2.8 0.50	ug/l ug/l	SW846 6010C SW846 6010C



**Summary of Hits Job Number:** MC30345

Account: Shaw Environmental & Infrastructure

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

**Collected:** 05/05/14 thru 05/06/14

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
MC30345-16	TW-10					
Arsenic Vanadium Zinc		4.6 7.5 B 5.6 B	4.0 10 20	2.9 2.8 0.50	ug/l ug/l ug/l	SW846 6010C SW846 6010C SW846 6010C





Sample Results	
Report of Analysis	



**Date Sampled:** 05/05/14

**Date Received:** 05/06/14

Percent Solids: n/a

## **Report of Analysis**

Client Sample ID: AOC5-MW1 Lab Sample ID: MC30345-1

**Matrix:** AQ - Ground Water Method: SW846 8270D BY SIM SW846 3510C

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

**Analytical Batch** File ID DF Analyzed By **Prep Date Prep Batch** Run #1 I89383.D 1 05/20/14 MR 05/09/14 OP38020 MSI3327

Run #2

**Final Volume Initial Volume** 

Run #1 990 ml 1.0 ml

Run #2

### **BN PAH List**

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.10	0.070	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.050	ug/l	
120-12-7	Anthracene	ND	0.10	0.093	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.051	0.020	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.029	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.051	0.032	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.027	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.039	ug/l	
218-01-9	Chrysene	ND	0.10	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.032	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.041	ug/l	
86-73-7	Fluorene	ND	0.10	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.031	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	0.075	ug/l	
91-20-3	Naphthalene	ND	0.10	0.042	ug/l	
85-01-8	Phenanthrene	ND	0.051	0.013	ug/l	
129-00-0	Pyrene	ND	0.10	0.039	ug/l	
CAS No.	<b>Surrogate Recoveries</b>	Run# 1	Run# 2	Run# 2 Limits		
4165-60-0	Nitrobenzene-d5	44%		30-13	0%	
321-60-8	2-Fluorobiphenyl	39%		30-13	0%	
1718-51-0	Terphenyl-d14	71%		30-13	0%	

ND = Not detectedMDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value



**Date Sampled:** 05/05/14

### +

## **Report of Analysis**

Client Sample ID: AOC5-MW1 Lab Sample ID: MC30345-1

Matrix:AQ - Ground WaterDate Received:05/06/14Method:MADEP EPH REV 1.1 SW846 3510CPercent Solids:n/a

Project: NRG Middletown, 1866 River Road, Middletown, CT

File IDDFAnalyzedByPrep DatePrep BatchAnalytical BatchRun #1DE4285.D105/15/14KN05/09/14OP38027GDE368

Run #2

Initial Volume Final Volume

Run #1 980 ml 2.0 ml

Run #2

## **Extractable TPHC Ranges**

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.) C9-C18 Aliphatics C19-C36 Aliphatics C11-C22 Aromatics	ND ND ND ND	100 100 100 100	100 100 100 100	ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	2 Limits		
84-15-1 321-60-8 3386-33-2	o-Terphenyl 2-Fluorobiphenyl 1-Chlorooctadecane	85% 92% 67%	40-140% 40-140% 40-140% 40-140%			

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value



## **Report of Analysis**

Client Sample ID: AOC9-SB1-MW1 Lab Sample ID: MC30345-2 **Date Sampled:** 05/05/14 **Matrix:** AQ - Ground Water **Date Received:** 05/06/14 Method: SW846 8270D BY SIM SW846 3510C **Percent Solids:** n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

**Analytical Batch** File ID DF Analyzed By **Prep Date Prep Batch** Run #1 I89384.D 1 05/20/14 MR 05/09/14 OP38020 MSI3327 Run #2

**Final Volume Initial Volume** Run #1 990 ml 1.0 ml Run #2

### **BN PAH List**

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.10	0.070	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.050	ug/l	
120-12-7	Anthracene	ND	0.10	0.093	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.051	0.020	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.029	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.051	0.032	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.027	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.039	ug/l	
218-01-9	Chrysene	ND	0.10	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.032	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.041	ug/l	
86-73-7	Fluorene	ND	0.10	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.031	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	0.075	ug/l	
91-20-3	Naphthalene	ND	0.10	0.042	ug/l	
85-01-8	Phenanthrene	ND	0.051	0.013	ug/l	
129-00-0	Pyrene	ND	0.10	0.039	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2 Limits		ts	
4165-60-0	Nitrobenzene-d5	50%		30-13	80%	
321-60-8	2-Fluorobiphenyl	46%		30-13	80%	
1718-51-0	Terphenyl-d14	70%		30-13	80%	

ND = Not detectedMDL = Method Detection Limit J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range



## 4

## **Report of Analysis**

 Client Sample ID:
 AOC9-SB1-MW1

 Lab Sample ID:
 MC30345-2
 Date Sampled:
 05/05/14

 Matrix:
 AQ - Ground Water
 Date Received:
 05/06/14

 Method:
 MADEP EPH REV 1.1
 SW846 3510C
 Percent Solids:
 n/a

Project: NRG Middletown, 1866 River Road, Middletown, CT

	File ID	DF	Analyzed	$\mathbf{B}\mathbf{y}$	<b>Prep Date</b>	<b>Prep Batch</b>	<b>Analytical Batch</b>
Run #1	DE4286.D	1	05/16/14	KN	05/09/14	OP38027	GDE368
Run #2							

Initial Volume Final Volume
Run #1 980 ml 2.0 ml
Run #2

## **Extractable TPHC Ranges**

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.) C9-C18 Aliphatics C19-C36 Aliphatics	ND ND ND	100 100 100	100 100 100	ug/l ug/l ug/l	
	C11-C22 Aromatics	ND	100	100	ug/l	
CAS No.	<b>Surrogate Recoveries</b>	Run# 1	Run# 2	Lim	its	
84-15-1 321-60-8 3386-33-2 580-13-2	o-Terphenyl 2-Fluorobiphenyl 1-Chlorooctadecane 2-Bromonaphthalene	70% 85% 57% 69%		40-1 40-1	40% 40% 40% 40%	

ND = Not detected MDL = Method Detection Limit J = Indicates and MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

 $J = \ Indicates \ an \ estimated \ value$ 



## **Report of Analysis**

Client Sample ID: AOC9-SB1-MW1

Lab Sample ID: MC30345-2

Matrix: AQ - Ground Water

Date Sampled: 05/05/14

Percent Solids: n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

## **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	<b>Prep Method</b>
Arsenic	2.9 U	4.0	2.9	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17129(2) Prep QC Batch: MP23021

RL = Reporting Limit

MDL = Method Detection Limit

U = Indicates a result < MDL

B = Indicates a result > = MDL but < RL



MC30345

## **Report of Analysis**

Client Sample ID: AOC9-SB2-MW2 Lab Sample ID: MC30345-3 **Date Sampled:** 05/05/14 **Matrix:** AQ - Ground Water **Date Received:** 05/06/14 Method: SW846 8270D BY SIM SW846 3510C **Percent Solids:** n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

**Analytical Batch** File ID DF Analyzed By **Prep Date Prep Batch** Run #1 I89385.D 1 05/20/14 MR 05/09/14 OP38020 MSI3327 Run #2

**Final Volume Initial Volume** Run #1 990 ml 1.0 ml

Run #2

### **BN PAH List**

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.096	0.10	0.070	ug/l	J
208-96-8	Acenaphthylene	ND	0.10	0.050	ug/l	
120-12-7	Anthracene	ND	0.10	0.093	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.051	0.020	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.029	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.051	0.032	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.027	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.039	ug/l	
218-01-9	Chrysene	ND	0.10	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.032	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.041	ug/l	
86-73-7	Fluorene	0.16	0.10	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.031	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	0.075	ug/l	
91-20-3	Naphthalene	0.057	0.10	0.042	ug/l	J
85-01-8	Phenanthrene	0.019	0.051	0.013	ug/l	JB
129-00-0	Pyrene	ND	0.10	0.039	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	# 2 Limits		
4165-60-0	Nitrobenzene-d5	54%		30-1	30%	
321-60-8	2-Fluorobiphenyl	48%		30-1	30%	
1718-51-0	Terphenyl-d14	65%		30-1	30%	

ND = Not detectedMDL = Method Detection Limit J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range



## **Report of Analysis**

Client Sample ID: AOC9-SB2-MW2 Lab Sample ID: MC30345-3 **Date Sampled:** 05/05/14 Matrix: AQ - Ground Water **Date Received:** 05/06/14 Method: MADEP EPH REV 1.1 SW846 3510C **Percent Solids:** n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

	File ID	DF	Analyzed	$\mathbf{B}\mathbf{y}$	<b>Prep Date</b>	<b>Prep Batch</b>	<b>Analytical Batch</b>
Run #1	DE4287.D	1	05/16/14	KN	05/09/14	OP38027	GDE368
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	2.0 ml
Run #2		

## **Extractable TPHC Ranges**

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.) C9-C18 Aliphatics C19-C36 Aliphatics C11-C22 Aromatics	150 ND ND 150	100 100 100 100	100 100 100 100	ug/l ug/l ug/l ug/l	
CAS No.	<b>Surrogate Recoveries</b>	Run# 1	Run# 2	Lim	its	
84-15-1 321-60-8 3386-33-2 580-13-2	o-Terphenyl 2-Fluorobiphenyl 1-Chlorooctadecane 2-Bromonaphthalene	87% 92% 62% 78%		40-1 40-1	40% 40% 40% 40%	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range



## 4

## **Report of Analysis**

Client Sample ID: AOC9-SB2-MW2
Lab Sample ID: MC30345-3
Matrix: AQ - Ground Water

Date Sampled: 05/05/14
Percent Solids: n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

## **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.9 U	4.0	2.9	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	1.7 U	5.0	1.7	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	4.8 U	10	4.8	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	2.8 U	10	2.8	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	81.4	20	0.50	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17129

(2) Prep QC Batch: MP23021

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL

B = Indicates a result > = MDL but < RL



## 4

## **Report of Analysis**

Client Sample ID: AOC9-SB2-MW2DUP

 Lab Sample ID:
 MC30345-4
 Date Sampled:
 05/05/14

 Matrix:
 AQ - Ground Water
 Date Received:
 05/06/14

 Method:
 SW846 8270D BY SIM
 SW846 3510C
 Percent Solids:
 n/a

Project: NRG Middletown, 1866 River Road, Middletown, CT

File IDDFAnalyzedByPrep DatePrep BatchAnalytical BatchRun #1I89386.D105/20/14MR05/09/14OP38020MSI3327

Run #2

Initial Volume Final Volume Run #1 990 ml 1.0 ml

Run #2

### **BN PAH List**

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.12	0.10	0.070	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.050	ug/l	
120-12-7	Anthracene	ND	0.10	0.093	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.051	0.020	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.029	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.051	0.032	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.027	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.039	ug/l	
218-01-9	Chrysene	ND	0.10	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.032	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.041	ug/l	
86-73-7	Fluorene	0.22	0.10	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.031	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	0.075	ug/l	
91-20-3	Naphthalene	0.054	0.10	0.042	ug/l	J
85-01-8	Phenanthrene	ND	0.051	0.013	ug/l	
129-00-0	Pyrene	ND	0.10	0.039	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
4165-60-0	Nitrobenzene-d5	54%		30-13	30%	
321-60-8	2-Fluorobiphenyl	52%		30-13	30%	
1718-51-0	Terphenyl-d14	69%		30-13	30%	

ND = Not detected MDL = Method Detection Limit J = Indicates the substitution of the substitution of

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value



## **Report of Analysis**

Client Sample ID: AOC2-SB1-MW1 Lab Sample ID: MC30345-5 **Date Sampled:** 05/05/14 **Date Received:** 05/06/14 Matrix: AQ - Ground Water **Percent Solids:** 

NRG Middletown, 1866 River Road, Middletown, CT **Project:** 

## **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.9 U	4.0	2.9	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	1.7 U	5.0	1.7	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	4.8 U	10	4.8	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	2.8 U	10	2.8	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	6.8 B	20	0.50	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17129

(2) Prep QC Batch: MP23021

RL = Reporting Limit U = Indicates a result < MDL

MDL = Method Detection Limit B = Indicates a result > = MDL but < RL



## **Report of Analysis**

Client Sample ID: TW-17D

Lab Sample ID: MC30345-6

Matrix: AQ - Ground Water

Date Sampled: 05/05/14

Percent Solids: n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

## **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.9 U	4.0	2.9	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	1.7 U	5.0	1.7	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	49.1	10	4.8	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	400	10	2.8	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	6.3 B	20	0.50	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17129

(2) Prep QC Batch: MP23021

RL = Reporting Limit U = Indicates a result < MDL

MDL = Method Detection Limit B = Indicates a result > = MDL but < RL



## **Report of Analysis**

Client Sample ID: AOC8-SB1-MW1 Lab Sample ID: MC30345-7 **Date Sampled:** 05/06/14 Matrix: AQ - Ground Water **Date Received:** 05/06/14 Method: SW846 8270D BY SIM SW846 3510C **Percent Solids:** n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

	File ID	DF	Analyzed	$\mathbf{B}\mathbf{y}$	<b>Prep Date</b>	<b>Prep Batch</b>	<b>Analytical Batch</b>
Run #1	I89387.D	1	05/20/14	MR	05/09/14	OP38020	MSI3327
Run #2							

**Final Volume Initial Volume** Run #1 990 ml 1.0 ml Run #2

### **BN PAH List**

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.10	0.10	0.070	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.050	ug/l	
120-12-7	Anthracene	ND	0.10	0.093	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.051	0.020	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.029	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.051	0.032	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.027	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.039	ug/l	
218-01-9	Chrysene	ND	0.10	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.032	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.041	ug/l	
86-73-7	Fluorene	ND	0.10	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.031	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	0.075	ug/l	
91-20-3	Naphthalene	ND	0.10	0.042	ug/l	
85-01-8	Phenanthrene	ND	0.051	0.013	ug/l	
129-00-0	Pyrene	ND	0.10	0.039	ug/l	
CAS No.	<b>Surrogate Recoveries</b>	Run# 1	Run# 2	Limi	its	
4165-60-0	Nitrobenzene-d5	52%		30-1	30%	
321-60-8	2-Fluorobiphenyl	51%		30-1	30%	
1718-51-0	Terphenyl-d14	60%		30-1	30%	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range



## **Report of Analysis**

Client Sample ID: AOC8-SB1-MW1 Lab Sample ID: MC30345-7 **Date Sampled:** 05/06/14 **Matrix:** AQ - Ground Water **Date Received:** 05/06/14 Method: MADEP EPH REV 1.1 SW846 3510C **Percent Solids:** n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

File ID DF **Prep Date Analytical Batch** Analyzed By **Prep Batch** Run #1 DE4288.D 1 05/16/14 KN 05/09/14 OP38027 **GDE368** Run #2

**Final Volume Initial Volume** Run #1 980 ml 2.0 ml Run #2

## **Extractable TPHC Ranges**

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.) C9-C18 Aliphatics C19-C36 Aliphatics C11-C22 Aromatics	287 ND 109 287	100 100 100 100	100 100 100 100	ug/l ug/l ug/l ug/l	
CAS No.	<b>Surrogate Recoveries</b>	Run# 1	Run# 2	Lim	its	
84-15-1 321-60-8 3386-33-2 580-13-2	o-Terphenyl 2-Fluorobiphenyl 1-Chlorooctadecane 2-Bromonaphthalene	85% 89% 67% 70%		40-1 40-1	40% 40% 40% 40%	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value



## \_\_\_

## **Report of Analysis**

Client Sample ID: AOC8-SB1-MW1DUP

 Lab Sample ID:
 MC30345-8
 Date Sampled:
 05/06/14

 Matrix:
 AQ - Ground Water
 Date Received:
 05/06/14

 Method:
 SW846 8270D BY SIM
 SW846 3510C
 Percent Solids:
 n/a

Project: NRG Middletown, 1866 River Road, Middletown, CT

	File ID	DF	Analyzed	By	<b>Prep Date</b>	<b>Prep Batch</b>	<b>Analytical Batch</b>
Run #1	I89333.D	1	05/19/14	MR	05/09/14	OP38029	MSI3325
D 110							

Run #2

Initial Volume Final Volume

Run #1 980 ml 2.0 ml

Run #2

### **BN PAH List**

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.20	0.14	ug/l	
208-96-8	Acenaphthylene	ND	0.20	0.10	ug/l	
120-12-7	Anthracene	ND	0.20	0.19	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.10	0.040	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	0.059	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.10	0.064	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	0.055	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	0.079	ug/l	
218-01-9	Chrysene	ND	0.20	0.049	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	0.065	ug/l	
206-44-0	Fluoranthene	ND	0.20	0.083	ug/l	
86-73-7	Fluorene	ND	0.20	0.20	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	0.062	ug/l	
91-20-3	Naphthalene	0.23	0.20	0.084	ug/l	В
85-01-8	Phenanthrene	0.033	0.10	0.026	ug/l	JB
129-00-0	Pyrene	ND	0.20	0.078	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
4165-60-0	Nitrobenzene-d5	0% a		30-13	30%	
321-60-8	2-Fluorobiphenyl	93%	30-130%			
1718-51-0	Terphenyl-d14	0% a		30-13	30%	

(a) Surrogate standard not added. EPH extract analyzed.

ND = Not detected MD

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value



## **Report of Analysis**

Client Sample ID: AOC8-SB1-MW1DUP

Lab Sample ID: MC30345-8 **Date Sampled:** 05/06/14 Matrix: AQ - Ground Water **Date Received:** 05/06/14 Method: MADEP EPH REV 1.1 SW846 3510C **Percent Solids:** n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

	File ID	DF	Analyzed	$\mathbf{B}\mathbf{y}$	<b>Prep Date</b>	<b>Prep Batch</b>	<b>Analytical Batch</b>
Run #1	DE4289.D	1	05/16/14	KN	05/09/14	OP38027	GDE368
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	2.0 ml
Run #2		

## **Extractable TPHC Ranges**

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.) C9-C18 Aliphatics	461 143	100 100	100 100	ug/l ug/l	
	C19-C36 Aliphatics C11-C22 Aromatics	134 461	100 100	100 100	ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
84-15-1	o-Terphenyl	84% 92%			40%	
321-60-8 3386-33-2					40% 40%	
580-13-2	580-13-2 2-Bromonaphthalene			40-1	40%	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range



## **Report of Analysis**

Client Sample ID: TW-21D

Lab Sample ID: MC30345-9

Matrix: AQ - Ground Water

Date Sampled: 05/06/14

Percent Solids: n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

## **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.9 U	4.0	2.9	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	1.7 U	5.0	1.7	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	32.4	10	4.8	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	2.8 U	10	2.8	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	5.4 B	20	0.50	ug/l	1	05/09/14	05/09/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17129(2) Prep QC Batch: MP23021

RL = Reporting Limit U = Indicates a result < MDL

MDL = Method Detection Limit B = Indicates a result > = MDL but < RL



## 4

## **Report of Analysis**

Client Sample ID: TW-18

Lab Sample ID:MC30345-10Date Sampled:05/06/14Matrix:AQ - Ground WaterDate Received:05/08/14Percent Solids:n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

## **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	11.0	4.0	2.9	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	2.9 B	5.0	1.7	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	53.7	10	4.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	161	10	2.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	6.0 B	20	0.50	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17148

(2) Prep QC Batch: MP23046

RL = Reporting Limit U = Indicates a result < MDL

MDL = Method Detection Limit B = Indicates a result > = MDL but < RL



## **Report of Analysis**

Client Sample ID: TW-18DUP
Lab Sample ID: MC30345-11
Matrix: AQ - Ground Water

Date Sampled: 05/06/14
Date Received: 05/08/14
Percent Solids: n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

## **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	12.5	4.0	2.9	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	2.9 B	5.0	1.7	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	56.7	10	4.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	167	10	2.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	5.7 B	20	0.50	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17148(2) Prep QC Batch: MP23046

RL = Reporting Limit

MDL = Method Detection Limit B = Indicates a result > = MDL but < RL



U = Indicates a result < MDL

Lab Sample ID:

Matrix:

Page 1 of 1

## **Report of Analysis**

**Date Sampled:** 05/06/14 **Date Received:** 05/08/14

Percent Solids: n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

## **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.9 U	4.0	2.9	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	1.7 U	5.0	1.7	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	27.0	10	4.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	2.8 U	10	2.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	5.3 B	20	0.50	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17148

Client Sample ID: AOC1-MW1R

MC30345-12

AQ - Ground Water

(2) Prep QC Batch: MP23046

RL = Reporting Limit U = Indicates a result < MDL

MDL = Method Detection Limit B = Indicates a result > = MDL but < RL



## **Report of Analysis**

Client Sample ID: AOC1-MW2

Lab Sample ID: MC30345-13

Matrix: AQ - Ground Water

Date Sampled: 05/06/14

Percent Solids: n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

## **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.9 U	4.0	2.9	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	1.7 U	5.0	1.7	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	4.8 U	10	4.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	2.8 U	10	2.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	65.1	20	0.50	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17148

(2) Prep QC Batch: MP23046

RL = Reporting Limit U = Indicates a result < MDL

MDL = Method Detection Limit B = Indicates a result > = MDL but < RL



4



## **Report of Analysis**

Client Sample ID: EB-1

Lab Sample ID: MC30345-14 **Date Sampled:** 05/06/14 **Matrix:** AQ - Equipment Blank **Date Received:** 05/08/14 Method: SW846 8270D BY SIM SW846 3510C **Percent Solids:** n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

File ID DF **Prep Date Analytical Batch** Analyzed By **Prep Batch** 05/09/14 Run #1 I89388.D 1 05/20/14 MR OP38020 MSI3327

Run #2

**Final Volume Initial Volume** 

Run #1 980 ml 1.0 ml

Run #2

### **BN PAH List**

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.10	0.070	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.070	ug/1 ug/l	
120-12-7	Anthracene	ND	0.10	0.031	-	
					ug/l	
56-55-3	Benzo(a)anthracene	ND	0.051	0.020	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.029	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.051	0.032	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.027	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.039	ug/l	
218-01-9	Chrysene	ND	0.10	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.033	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.041	ug/l	
86-73-7	Fluorene	ND	0.10	0.10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.031	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	0.076	ug/l	
91-20-3	Naphthalene	0.060	0.10	0.042	ug/l	J
85-01-8	Phenanthrene	ND	0.051	0.013	ug/l	
129-00-0	Pyrene	ND	0.10	0.039	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
4165-60-0	Nitrobenzene-d5	90%		30-13	30%	
321-60-8	2-Fluorobiphenyl	82%	30-130%			
1718-51-0		79%	30-130%			
1/10-31-0	Terphenyl-d14	1770		30-1.	JU%	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound



Page 1 of 1

## **Report of Analysis**

Client Sample ID: EB-1

 Lab Sample ID:
 MC30345-14
 Date Sampled:
 05/06/14

 Matrix:
 AQ - Equipment Blank
 Date Received:
 05/08/14

 Method:
 MADEP EPH REV 1.1 SW846 3510C
 Percent Solids:
 n/a

Project: NRG Middletown, 1866 River Road, Middletown, CT

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	<b>Analytical Batch</b>
Run #1	DE4291.D	1	05/16/14	KN	05/09/14	OP38027	GDE368
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	2.0 ml
Run #2		

## **Extractable TPHC Ranges**

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.) C9-C18 Aliphatics C19-C36 Aliphatics C11-C22 Aromatics	ND ND ND ND	100 100 100 100	100 100 100 100	ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
84-15-1 321-60-8 3386-33-2 580-13-2	o-Terphenyl 2-Fluorobiphenyl 1-Chlorooctadecane	78% 91% 55%		40-1 40-1 40-1	40%	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value



## **Report of Analysis**

Client Sample ID: EB-1

Lab Sample ID:MC30345-14Date Sampled:05/06/14Matrix:AQ - Equipment BlankDate Received:05/08/14Percent Solids:n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

## **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.9 U	4.0	2.9	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	1.7 U	5.0	1.7	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	4.8 U	10	4.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	2.8 U	10	2.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	6.8 B	20	0.50	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17148

(2) Prep QC Batch: MP23046

RL = Reporting Limit U = Indicates a result < MDL

MDL = Method Detection Limit B = Indicates a result > = MDL but < RL



## **Report of Analysis**

Client Sample ID: TW-14

Lab Sample ID: MC30345-15

Matrix: AQ - Ground Water

Date Sampled: 05/06/14

Percent Solids: n/a

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

## **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.9 U	4.0	2.9	ug/l	1	05/12/14	05/12/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	1.7 U	5.0	1.7	ug/l	1	05/12/14	05/12/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	4.8 U	10	4.8	ug/l	1	05/12/14	05/12/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	4.6 B	10	2.8	ug/l	1	05/12/14	05/12/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	6.8 B	20	0.50	ug/l	1	05/12/14	05/12/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17135

(2) Prep QC Batch: MP23028

RL = Reporting Limit U = Indicates a result < MDL

MDL = Method Detection Limit B = Indicates a result > = MDL but < RL







## **Report of Analysis**

Client Sample ID: TW-10 Lab Sample ID: MC30345-16 **Date Sampled:** 05/06/14 **Date Received:** 05/08/14 Matrix: AQ - Ground Water **Percent Solids:** 

NRG Middletown, 1866 River Road, Middletown, CT **Project:** 

## **Total Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.6	4.0	2.9	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Lead	1.7 U	5.0	1.7	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Selenium	4.8 U	10	4.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Vanadium	7.5 B	10	2.8	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>
Zinc	5.6 B	20	0.50	ug/l	1	05/14/14	05/14/14 EAL	SW846 6010C <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA17148

(2) Prep QC Batch: MP23046

RL = Reporting Limit U = Indicates a result < MDL

MDL = Method Detection Limit B = Indicates a result > = MDL but < RL







Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- · Chain of Custody
- RCP Form
- Sample Tracking Chronicle



Д	$\Box$	C	L	-	T	E	8	1	٠
			L.A.	В	OB	A. T	OB	1 8	55

Client / Reporting Information

Raymond.Cadorette@CBI.com

Paul LeDoux 617-212-8271

Field ID / Point of Collection AOCT- MWI

2 AOC9-SBI-MWI -3 AOC9-SBJ-MWZ

5 ARCZ-SB1-MWZ TW-17D

TW-21D

Std. 10 Business Days Std. 5 Susiness Days (By Contract only)

2 Day EMERGENCY 1 Day EMERGENCY

ica Stople

Emergency & Rush T/A data available VIA Lablink

5 Day RUSH 3 Day EMERGENCY

Relinquished by Sampler.

Relinquished by:

4 AOC9-5B2-MW7dup

ACC8-SBI-MWI

ACC8-SBI-MWIdet

Turnaround Time ( Business days)

02021

CB&I Environmental

150 Royall Street

Canton, MA

617-589-6102

-8

### CHAIN OF CUSTODY

Accutest Laboratories of New England 495 Technology Center West, Building One TEL. 508-481-6200 FAX: 508-481-7753 www.accutest.com Project Information

Street Address

PL GW

Commercial "A" (Level 1)

Commercial "B" (Level 2)

FULLT1 (Level 3+4)

CT RCP

Sample Custody must be documented below each time samples change possession, including courier d

ustody Seal #

MA MCP

QA/QC

NRG Middletown

Middletown, CT

oject Manager Andrew Walker KXXXXXXXXXXXXXXXXXXX

5.4.14

6950

1210

1435

1425

1700

1845

0830

0945

5.6.14 0820

River Road

1009634026

Approved By (Accutest PM): / Date:

Received By:

56:14

		J <b>ST</b> (										Communication					***	•			= 1	c	OF				
ıt	er Wes	st, Buile	din	g O	ne							FED-EX Tracking #							Equile Order Control #								
	FAX: utest.c	: 508-4 :om	81-	775	53							Accurred Quote #							Acculest Joh # MC 30345								
fc	ormati	on											Rec	ueste	d Ana	lysis	see T	EST (					Matrix Codes				
et	Billing Information ( If different from Report to) pany Name  RI Address  State Zip  stion: FOR								) 		27- 287051M CABHINICAING		(CTDEEP Mexhod)	The state of the s	7100 Metals Pb. St. V. Zn)	OPOC METALS		The state of the s	The state of the s		DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SU - Soil SL - Studge SED-Sedment OI - Oil LIO - Other Liquid AIR - Air SOI - Other Solid WP - Wipe FB-Field Blank EB - Equipment Blank RB- Rinse Blank						
									1	827	ľ	0		32	34		İ			TB-Trip Blank							
d			-	NaOH 2	HNO3	H2SO4	NONE	$\overline{}$	MECH	T	Bisulfate		2 4 4 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1		EPH		せつ	\$ d 5									
-	Matrix	# of bottles	3	g	Í		2		Me	ű.	á	-	沙山		2		U	<u>~</u>		-	╁	+-	LAB USE ONLY				
+	- I	5	-	-	,	-	2	-	$\vdash$	_	H					ļ			-	-	+	-					
+	+	.5	2	-	1	H	2	_	-				2 ス		2		,	1				┼	<u> </u>				
4	+	_	1	L	l		છ			L	_				办		a a			_	<u> </u>	1					
1	+	え	2	_			_	_	ļ	_			2							<u> </u>	<u> </u>						
1		ŧ	L		į				L	L	_						1										
		1	L		1												1										
		4	2				3						a		2												
-		ュ					2								7					ļ							
Ī		1			i												1	ľ					19FF.5F				
T	Т																										
J	$\Box$		Г																								
1	$\checkmark$																										
	90000	Data	Del	ive	abl	e In	for	nati	on					Same		C	omme	nts /	peci	al Inst	ructio	ns					
C	Commercial "A" (Level 1)         NYASP Cate           Commercial "B" (Level 2)         NYASP Cate           FULLT1 (Level 3+4)         State Forms									tegi 15	ory B			Cat	her	Key ine. d.Ca	Joe	:@CI	3T - C	OB	and	PDF to:					
CT RCP EDD Format  MA MCP Other  Congmercial "A" = Results Only										GISI 	Key										r SWPC						
P	Commercial "B" = Results + QC Summary  QC reporting level: CTDE										E	P RCP. Refer to site specific QAPP.															

Date Time: | 83

Preserved where applicable

Intact
Not intact

MC30345: Chain of Custody Page 1 of 4

2.1, 2.4





## CHAIN OF CUSTODY

MACCU!ES!	495 Technology								gy Center West, Building One									Bottle Order Control #						
LABORATORIES			EL. 508-48Ì	-6200	) FAX	: 508-48							Accutest Qu	ote#				Accusest Job mc 30345						
		a Deservation and a second			cutest.		V-15-53-57-	versiye.	17.07.19.1	7007	4.00	-00-00	50-97600	meles.	7576-2757			TEST CODE sheet) Matrix Codes						
Client / Reporting Information ompany Name	Project Name		Pro	ject Information										eques	ted Ana	lysis (	see II	2810	ODE	sheet)		Matrix	Codes	
CB&I Environmental	NRG Mi	dd1etown												ne o								DW - Drink GW - Grou		
reel Address 150 Royall Street	River	Road		Billing Information ( If different from Report to)										2	2		9	. ]	4	i		W\∜ - SW - Surfi		
ity State Zip	City:			Con	npany Nar		нүнс	intere	ille ille	111 176	porc	10,	1	3	20		المأتحا	. 1	r C	ιl	İ		- Soil Sludge	
Canton, MA 02021		town, CT											44	7	Method		32	, 1	212	6		SED-Se		
roject Contact E-mail Raymond.Cadorette@CBI.com	Project# 100963	4026		Stre	et Addres:	9							100	7	1		40,		20			LIQ - Oth		
hone# Fax#	Client PO#	+020	City	,		5	tate			Zip		2	40	W		63	. [	N ]			SOL - OI	ther Solid		
617-589-6102												İ	13	ethylna	DEEP,		UN		2000			FB-Field	Wipe ld Blank	
ampler(s) Name(s) Phone #	Atte	ntion:			***********	PO#				0	42	fet.		6,0	.	53			EB- Equipr RB- Rins					
Paul LeDoux 617-212-8271	Andre	w Walker					·						18		~	1	COL	. [	6010 Arse			TB-Trip		
			Collection		4		<b>}</b>		r of pre				N	3	H		44		44	.		ļ		
routest Field ID / Point of Collection	MEOHIDI VIAI	Date	Time	Sample	ed Matrix	# of battles	HC!	HN03	H2SO4	DI Water	MEOH	Bisuitate	K/J3	Ŕ	EF		EP		EPI			LAB US	E ONLY	
10 TW-18		6-16-14	1055	PL	GW	1		1						1			1							
11 Tw- 18 dup			1095	1		1		i									- [							
12 ADCI-MWIR			1225			1		1				1					(	1						
13 AOCI - MW2			1420	$\sqcap$	$\top$	1	П	1		П							(							
19 RB-1			1435	$\Box$	+	5	1	1	9	Į	$\top$	11		à l	2		1				$\top$	1		
5 TW-14			1535	П	$\top \top$	1	П	1							1		(							
16 TW-10		V	1745		11	1	П	7				П					1							
		1			11		П	T		$\Box$		П		1				$\neg$						
							П			П		$\prod$												
							П		Т	$\Box$		П										19D. F	5A	
		****	<del> </del>	1, 1	/ . 1		П			$\sqcap$		$\Box$												
			1	Y	$\forall \forall$		П			11		П												
				Harris	9649994WA	Data	Deliv	erabl	e Info											l Instru				
Turnaround Time ( Business days)	Approved By (Acc	outest PM); / Daie:				rcial "A" (L				_		Catego			nail Cathe							& PDF t	to:	
Std. 10 Business Days				rcial "B" (L Level 3+4		)	늗		ASP (	Catego	ry B								.com.					
Std. 5 Business Days (By Contract only)  5 Day RUSH				j	CTRCP		•,						GISKe	y	-									
3 Day EMERGENCY			MA MCF	•		_	-		her											CT SWI	5C			
2 Day EMERGENCY 1 Day EMERGENCY				Commerc					mmarv	,														
Emergency & Rush T/A data available V/A Lablink		QA/	QC r	eport	ing	16	ve.	1:	CTI	DEP	RCP.	RCP. Refer to site specific						: QAP	Р.					
Sample Custody pust be docum							Reling			osse	ssion	, incli	uding cou	rier de	Date-Tir			Received By:						
Belinquished by Sapralor: Date Time:	14	Mille	<u>ui S</u>	as	SI-		2	pesnord	(	50		4			\$ 181	74,	13:4	3	u	Ü	ll by	_		
Relinquished by Sampler: Date Time:	1 Ob	Received By:	1 /	,			Relinqu	uished	Ву:						Date Tir	ne:	F	Received	f By:					

Intact
Not intact

Preserved where applicable

MC30345: Chain of Custody Page 2 of 4

Cooler Temp.





Accutest Job Number: MC30	345	Clie	ent: CBI ENV			Immediate Client Serv	vices Action	Require	d: Yes
Date / Time Received: 5/6/20	)14		Delive	ry Method:	Accutest Courier				
Project: NRG MIDDLETOWN			No. Co	oolers:	Airbil	I #'s:			
Cooler Security Y  1. Custody Seals Present: ✓	or N	3 CC	OC Present:	Y or N	Sample Integrity -			or N	
2. Custody Seals Intact:  2. Custody Seals Intact:			Dates/Time OK	<b>V</b>	Sample labels pre     Container labeling	g complete:	<b>✓</b>		
Cooler Temperature	Y or	N			Sample container	r label / COC agree:		$\checkmark$	
Temp criteria achieved:     Cooler temp verification:     Cooler media:		ed gun (bag)			Sample Integrity  1. Sample rec'd with	nin HT:	<b>V</b>	or N	
			N1/A		All containers acc     Condition of same		<b>✓</b>	ntact	
Quality Control Preservation	<u>Y</u>	<u>N</u>	<u>N/A</u>			'		ilaci	<del></del>
<ol> <li>Trip Blank present / cooler:</li> <li>Trip Blank listed on COC:</li> </ol>					1. Analysis request	<u>.</u>	<u>Y</u>	<u>N</u>	<u>N/A</u>
3. Samples preserved properly:	$\checkmark$				2. Bottles received	for unspecified tests		✓	
4. VOCs headspace free:			$\checkmark$		Sufficient volume     Compositing inst	•			<b>✓</b>
Comments					<ol><li>Filtering instructi</li></ol>	ons clear:			✓
-5 sample ID does not match the coc.	cample but	ille lias AG	G2-351-HW-1 , 50	THE COURS ACC	22 SB1*WW2 time and date	are ox.			

 Accutest Laboratories
 495 Technology Center West, Bldg One
 Marlborough, MA

 V:508.481.6200
 F: 508.481.7753
 www/accutest.com

MC30345: Chain of Custody Page 3 of 4









#### Sample Receipt Summary - Problem Resolution

Accutest Job Number: MC30345

CSR: Jeremy Vienneau Response Date: 5/8/2014

Response: The client confirmed that the ID should be AOC2-SB1-MW1. See email in file.

 Accutest Laboratories
 495 Technology Center West, Bldg One
 Marlborough, MA

 V:508.481.6200
 F: 508.481.7753
 www/accutest.com

MC30345: Chain of Custody Page 4 of 4



## N

#### O

#### Reasonable Confidence Protocol Laboratory Analysis QA/QC Certification Form

Laboratory Name: Accutest New England Client: Shaw Environmental & Infrastructure

Project Location: NRG Middletown, 1866 River Road, Project Number: 1009634022-02

Sampling Date(s): 5/5/2014

**Laboratory Sample ID(s):** MC30345-1, MC30345-2, MC30345-3, MC30345-4, MC30345-5, MC30345-6, MC30345-

7, MC30345-8, MC30345-9, MC30345-10, MC30345-11, MC30345-12, MC30345-13,

MC30345-14, MC30345-15, MC30345-16

Methods: MADEP EPH REV 1.1, SW846 6010C, SW846 8270D BY SIM

Middletown, CT

motrious.	WADEL ELLITTE 1.1, 300040 00100, 300040 0270D DT 31101		
1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the CTDEP method-specific Reasonable Confidence Protocol documents)?	Yes 🔽	No 🗖
1A	Where all the method specified preservation and holding time requirements met?	Yes 🔽	No 🗖
1B	VPH and EPH mehods only: Was the VPH or EPH method conducted without significant modifications (See section 11.3 of respective methods)	Yes 🔽	No □
2	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	Yes 🔽	No 🗖
3	Were samples received at an appropriate temperature (<6° C)?	Yes 🗹	No 🗆
4	Were all QA/QC performance criteria specified in the CTDEP Reasonable Confidence Protocol documents achieved?	Yes 🗖	No 🔽
5	a) Were reporting limits specified or referenced on the chain-of-custody?	Yes 🔽	No 🗖
	b) Were these reporting limits met?	Yes 🔽	No 🗆
6	For each analytical method referenced in this laboratory report package, were results reported for all constituents identified in the method-specific analyte lists presented in the Reasonable Confidence Protocol documents?	Yes 🗖	No 🔽
7	Are project-specific matrix spikes and laboratory duplicates included in this data set?	Yes 🗖	No 🔽

Note: For all questions to which the response was "No" (with the exception of question #7), additional information must be provided in an attached narrative. If the answer to question #1, #1A or #1B is "No", the data package does not meet the requirements for "Reasonable Confidence".

l, the undersigned, attest under pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete.

Authorized

Signature: Position: Lab Director

Printed Name: Reza Tand Date: 5/20/2014

Accutest New England



Job No:

MC30345

## **Internal Sample Tracking Chronicle**

Shaw Environmental & Infrastructure

NRG Middletown, 1866 River Road, Middletown, CT

Project No: 1009634026

Sample Number	Method	Analyzed	Ву	Prepped	Ву	Test Codes
MC30345-1 AOC5-MW	Collected: 05-MAY-14	09:50 By: PL	Receiv	ed: 06-MAY	7-14 By	:
	MADEP EPH REV 1.1 SW846 8270D BY SIM			09-MAY-14 09-MAY-14		BMAEPHR B8270SIMPAH
MC30345-2 AOC9-SB1-	Collected: 05-MAY-14 MW1	12:10 By: PL	Receiv	ed: 06-MAY	-14 By	:
MC30345-2	SW846 6010C MADEP EPH REV 1.1 SW846 8270D BY SIM		KN	09-MAY-14 09-MAY-14 09-MAY-14	MT	AS BMAEPHR B8270SIMPAH
MC30345-3 AOC9-SB2-	Collected: 05-MAY-14 MW2	14:25 By: PL	Receiv	ed: 06-MAY	7-14 By	:
MC30345-3	SW846 6010C MADEP EPH REV 1.1 SW846 8270D BY SIM		KN	09-MAY-14 09-MAY-14 09-MAY-14	MT	AS,PB,SE,V,ZN BMAEPHR B8270SIMPAH
MC30345-4 AOC9-SB2-	Collected: 05-MAY-14 MW2DUP	14:25 By: PL	Receiv	ed: 06-MAY	7-14 By	:
MC30345-4	SW846 8270D BY SIM	20-MAY-14 13:01	MR	09-MAY-14	PA	B8270SIMPAH
MC30345-5 AOC2-SB1-	Collected: 05-MAY-14 MW1	17:00 By: PL	Receiv	ed: 06-MAY	-14 By	:
MC30345-5	SW846 6010C	09-MAY-14 18:09	EAL	09-MAY-14	KR	AS,PB,SE,V,ZN
MC30345-6 TW-17D	Collected: 05-MAY-14	18:45 By: PL	Receiv	ed: 06-MAY	-14 By	:
MC30345-6	SW846 6010C	09-MAY-14 18:15	EAL	09-MAY-14	KR	AS,PB,SE,V,ZN
MC30345-7 AOC8-SB1-	Collected: 06-MAY-14 MW1	08:20 By: PL	Receiv	ed: 06-MAY	-14 By	

09-MAY-14 MT

09-MAY-14 PA

**BMAEPHR** 

B8270SIMPAH

MC30345-7 MADEP EPH REV 1.1 16-MAY-14 01:45 KN

MC30345-7 SW846 8270D BY SIM 20-MAY-14 13:24 MR

## **Internal Sample Tracking Chronicle**

Shaw Environmental & Infrastructure

**Job No:** MC30345

NRG Middletown, 1866 River Road, Middletown, CT

Project No: 1009634026

	Sample Number	Method	Analyzed	Ву	Prepped	Ву	Test Codes	
--	------------------	--------	----------	----	---------	----	------------	--

MC30345-8 Collected: 06-MAY-14 08:20 By: PL Received: 06-MAY-14 By:

AOC8-SB1-MW1DUP

MC30345-8 MADEP EPH REV 1.1 16-MAY-14 02:22 KN 09-MAY-14 MT BMAEPHR MC30345-8 SW846 8270D BY SIM 19-MAY-14 13:20 MR 09-MAY-14 MT B8270SIMPAH

MC30345-9 Collected: 06-MAY-14 09:45 By: PL Received: 06-MAY-14 By:

TW-21D

MC30345-9 SW846 6010C 09-MAY-14 18:21 EAL 09-MAY-14 KR AS.PB.SE.V.ZN

MC30345-10Collected: 06-MAY-14 10:55 By: PL Received: 08-MAY-14 By:

TW-18

MC30345-108W846 6010C 14-MAY-14 17:03 EAL 14-MAY-14 KR AS,PB,SE,V,ZN

MC30345-11Collected: 06-MAY-14 10:55 By: PL Received: 08-MAY-14 By:

TW-18DUP

MC30345-1SW846 6010C 14-MAY-14 17:08 EAL 14-MAY-14 KR AS.PB.SE.V.ZN

MC30345-12Collected: 06-MAY-14 12:25 By: PL Received: 08-MAY-14 By:

AOC1-MW1R

MC30345-12SW846 6010C 14-MAY-14 17:14 EAL 14-MAY-14 KR AS,PB,SE,V,ZN

MC30345-13Collected: 06-MAY-14 14:20 By: PL Received: 08-MAY-14 By:

AOC1-MW2

MC30345-13W846 6010C 14-MAY-14 17:20 EAL 14-MAY-14 KR AS,PB,SE,V,ZN

MC30345-14Collected: 06-MAY-14 14:35 By: PL Received: 08-MAY-14 By:

EB-1

MC30345-14\SW846 6010C 14-MAY-14 17:26 EAL 14-MAY-14 KR AS,PB,SE,V,ZN MC30345-14\MADEP EPH REV 1.1 16-MAY-14 03:34 KN 09-MAY-14 MT BMAEPHR MC30345-14\SW846 8270D BY SIM 20-MAY-14 13:47 MR 09-MAY-14 PA B8270SIMPAH



## 5.3

### **Internal Sample Tracking Chronicle**

Shaw Environmental & Infrastructure

**Job No:** MC30345

NRG Middletown, 1866 River Road, Middletown, CT

Project No: 1009634026

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes	
		•	•	• •	•		

MC30345-15Collected: 06-MAY-14 15:35 By: PL Received: 08-MAY-14 By:

TW-14

MC30345-158W846 6010C 12-MAY-14 19:12 EAL 12-MAY-14 KR AS,PB,SE,V,ZN

MC30345-16Collected: 06-MAY-14 17:25 By: PL Received: 08-MAY-14 By:

TW-10

MC30345-16SW846 6010C 14-MAY-14 17:32 EAL 14-MAY-14 KR AS,PB,SE,V,ZN



## GC/MS Semi-volatiles

## QC Data Summaries

## Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries



Method: SW846 8270D BY SIM

## **Method Blank Summary**

Job Number: MC30345

**Account:** FDG Shaw Environmental & Infrastructure

Project: NRG Middletown, 1866 River Road, Middletown, CT

Sample	File ID	DF	Analyzed	By	<b>Prep Date</b>	Prep Batch	<b>Analytical Batch</b>
OP38029-MB	I89329.D	1	05/19/14	MR	05/09/14	OP38029	MSI3325

#### The QC reported here applies to the following samples:

MC30345-8

CAS No. Compound		Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.20	0.14	ug/l	
208-96-8	Acenaphthylene	ND	0.20	0.099	ug/l	
120-12-7	Anthracene	ND	0.20	0.18	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.10	0.039	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	0.057	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.10	0.063	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	0.054	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	0.077	ug/l	
218-01-9	Chrysene	ND	0.20	0.048	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	0.064	ug/l	
206-44-0	Fluoranthene	ND	0.20	0.081	ug/l	
86-73-7	Fluorene	ND	0.20	0.20	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	0.061	ug/l	
91-20-3	Naphthalene	0.27	0.20	0.082	ug/l	
85-01-8	Phenanthrene	0.047	0.10	0.025	ug/l	J
129-00-0	Pyrene	ND	0.20	0.077	ug/l	

#### CAS No. Surrogate Recoveries Limits

4165-60-0	Nitrobenzene-d5	0% * a	30-130%
321-60-8	2-Fluorobiphenyl	106%	30-130%
1718-51-0	Terphenyl-d14	0% * a	30-130%

(a) Surrogate standard not added. EPH extract analyzed.



Method: SW846 8270D BY SIM

## **Method Blank Summary**

**Job Number:** MC30345

**Account:** FDG Shaw Environmental & Infrastructure

Project: NRG Middletown, 1866 River Road, Middletown, CT

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	<b>Analytical Batch</b>
OP38020-MB	I89382.D	1	05/20/14	MR	05/09/14	OP38020	MSI3327

#### The QC reported here applies to the following samples:

MC30345-1, MC30345-2, MC30345-3, MC30345-4, MC30345-7, MC30345-14

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.10	0.069	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.050	ug/l	
120-12-7	Anthracene	ND	0.10	0.092	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	0.020	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.029	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	0.032	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.027	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.039	ug/l	
218-01-9	Chrysene	ND	0.10	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.032	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.041	ug/l	
86-73-7	Fluorene	ND	0.10	0.099	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.031	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	0.074	ug/l	
91-20-3	Naphthalene	ND	0.10	0.041	ug/l	
85-01-8	Phenanthrene	0.019	0.050	0.013	ug/l	J
129-00-0	Pyrene	ND	0.10	0.038	ug/l	

#### CAS No. Surrogate Recoveries Limits

4165-60-0	Nitrobenzene-d5	85%	30-130%
321-60-8	2-Fluorobiphenyl	76%	30-130%
1718-51-0	Terphenyl-d14	77%	30-130%



Method: SW846 8270D BY SIM

## Blank Spike/Blank Spike Duplicate Summary

Job Number: MC30345

Account: FDG Shaw Environmental & Infrastructure

Project: NRG Middletown, 1866 River Road, Middletown, CT

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	<b>Analytical Batch</b>
OP38020-BS	R38988.D	1	05/14/14	WK	05/09/14	OP38020	MSR1435
OP38020-BSD	R38989.D	1	05/14/14	WK	05/09/14	OP38020	MSR1435

#### The QC reported here applies to the following samples:

MC30345-1, MC30345-2, MC30345-3, MC30345-4, MC30345-7, MC30345-14

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	50	42.5	85	41.2	82	3	40-140/30
208-96-8	Acenaphthylene	50	39.4	79	38.7	77	2	40-140/30
120-12-7	Anthracene	50	49.7	99	38.0	76	27	40-140/30
56-55-3	Benzo(a)anthracene	50	39.4	79	38.7	77	2	40-140/30
50-32-8	Benzo(a)pyrene	50	43.1	86	43.4	87	1	40-140/30
205-99-2	Benzo(b)fluoranthene	50	37.1	74	37.7	75	2	40-140/30
191-24-2	Benzo(g,h,i)perylene	50	36.6	73	37.2	74	2	40-140/30
207-08-9	Benzo(k)fluoranthene	50	56.7	113	56.9	114	0	40-140/30
218-01-9	Chrysene	50	49.7	99	50.6	101	2	40-140/30
53-70-3	Dibenzo(a,h)anthracene	50	37.6	75	38.2	76	2	40-140/30
206-44-0	Fluoranthene	50	43.5	87	43.5	87	0	40-140/30
86-73-7	Fluorene	50	43.1	86	42.3	85	2	40-140/30
193-39-5	Indeno(1,2,3-cd)pyrene	50	38.1	76	38.7	77	2	40-140/30
91-57-6	2-Methylnaphthalene	50	37.2	74	36.0	72	3	40-140/30
91-20-3	Naphthalene	50	38.7	77	37.6	75	3	40-140/30
85-01-8	Phenanthrene	50	39.2	78	38.4	77	2	40-140/30
129-00-0	Pyrene	50	43.6	87	43.5	87	0	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
321-60-8	Nitrobenzene-d5	81%	80%	30-130%
	2-Fluorobiphenyl	68%	67%	30-130%
	Terphenyl-d14	84%	81%	30-130%



<sup>\* =</sup> Outside of Control Limits.

Method: SW846 8270D BY SIM

## Blank Spike/Blank Spike Duplicate Summary

Job Number: MC30345

Account: FDG Shaw Environmental & Infrastructure

Project: NRG Middletown, 1866 River Road, Middletown, CT

Sample OP38029-BS OP38029-BSD	<b>File ID</b> I89331.D I89332.D	<b>DF</b> 1	<b>Analyzed</b> 05/19/14 05/19/14	<b>By</b> MR MR	<b>Prep Date</b> 05/09/14 05/09/14	Prep Batch OP38029 OP38029	Analytical Batch MSI3325 MSI3325
0130027 BSD	10,332.15	1	03/15/14	WIIX	03/03/14	013002)	111013323

The QC reported here applies to the following samples:

MC30345-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	50	46.8	94	40.1	80	15	40-140/30
208-96-8	Acenaphthylene	50	49.0	98	41.8	84	16	40-140/30
120-12-7	Anthracene	50	49.9	100	44.6	89	11	40-140/30
56-55-3	Benzo(a)anthracene	50	56.0	112	49.5	99	12	40-140/30
50-32-8	Benzo(a)pyrene	50	54.5	109	48.3	97	12	40-140/30
205-99-2	Benzo(b)fluoranthene	50	55.6	111	49.2	98	12	40-140/30
191-24-2	Benzo(g,h,i)perylene	50	53.5	107	47.3	95	12	40-140/30
207-08-9	Benzo(k)fluoranthene	50	52.9	106	47.2	94	11	40-140/30
218-01-9	Chrysene	50	52.1	104	46.3	93	12	40-140/30
53-70-3	Dibenzo(a,h)anthracene	50	54.6	109	48.4	97	12	40-140/30
206-44-0	Fluoranthene	50	50.6	101	44.6	89	13	40-140/30
86-73-7	Fluorene	50	49.6	99	43.1	86	14	40-140/30
193-39-5	Indeno(1,2,3-cd)pyrene	50	52.7	105	46.7	93	12	40-140/30
91-20-3	Naphthalene	50	43.3	87	34.4	69	23	40-140/30
85-01-8	Phenanthrene	50	50.3	101	44.9	90	11	40-140/30
129-00-0	Pyrene	50	50.0	100	44.2	88	12	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
4165-60-0	Nitrobenzene-d5	0% * a	0% * a	30-130%
321-60-8	2-Fluorobiphenyl	99%	88%	30-130%
1718-51-0	Terphenyl-d14	0% * a	0% * a	30-130%

(a) Surrogate standard not added. EPH extract analyzed.



<sup>\* =</sup> Outside of Control Limits.

## Semivolatile Internal Standard Area Summary

Job Number: MC30345

**Account:** FDG Shaw Environmental & Infrastructure

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

 Check Std:
 MSI3325-CC3320
 Injection Date:
 05/19/14

 Lab File ID:
 189320.D
 Injection Time:
 08:13

**Instrument ID:** GCMSI Method: SW846 8270D BY SIM

	IS 1 AREA	RT	IS 2 AREA RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	575401	4.25	1230873 5.30	595491	6.82	911758	8.25	498795	11.02	1298356	
Upper Limit <sup>a</sup> Lower Limit <sup>b</sup>	1150802 287701	2 4.75 3.75	2461746 5.80 615437 4.80	1190982 297746	6.32	1823516 455879	7.75	997590 249398	11.52 10.52	2596712 649178	13.01 12.01
Lab Sample ID	IS 1 AREA	RT	IS 2 AREA RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP38130-MB	605510	4.25	1297988 5.29	624881	6.82	943704	8.25	486680	11.01	1241945	12.50
OP38130-BS	611058	4.25	1307514 5.30	623514	6.82	923745	8.25	484968	11.02	1225949	12.51
OP38130-MS	547904	4.25	1173751 5.29	563811	6.82	840381	8.25	434328	11.02	1112529	12.51
OP38130-MSD	540079	4.25	1170843 5.29	556196	6.82	837913	8.25	434850	11.02	1134060	12.51
MC30400-7	553944	4.25	1183730 5.29	561344	6.82	782506	8.25	422918	11.02	1099756	12.51
ZZZZZZ	637820	4.25	1359304 5.29	645207	6.82	958192	8.25	472786	11.01	1150714	12.50
ZZZZZZ	562877	4.24	1222361 5.29	584835	6.82	876586	8.25	485473	11.02	1299637	12.51
OP38029-MB	473466	4.24	1026567 5.29	483930	6.82	755853	8.25	409896	11.01	1086432	12.50
ZZZZZZ	520266	4.24	948283 5.30	527884	6.83	800910	8.26	476121	11.02	1238324	12.50
OP38029-BS	490886	4.24	1064258 5.29	505651	6.82	780983	8.25	425914	11.01	1127105	12.50
OP38029-BSD	539302	4.24	1159034 5.29	552434	6.82	844566	8.25	464444	11.02	1222920	12.50
MC30345-8	533282	4.24	1130233 5.29	532066	6.82	814803	8.25	445840	11.01	1185508	12.50
OP38100-MB	527015	4.24	1131058 5.29	540087	6.82	813095	8.25	432531	11.01	1133080	12.50
OP38078-MB	598359	4.24	1275859 5.29	609460	6.82	901834	8.25	483657	11.01	1245099	12.50
OP38078-BS	645086	4.25	1372790 5.30	656266	6.82	968804	8.25	518149	11.02	1327700	12.51
ZZZZZZ	615660	4.24	1330843 5.29	639837	6.82	954728	8.25	512127	11.01	1305504	12.50
MSI3325-ECC33	20564579	4.25	1207604 5.29	580162	6.82	867305	8.25	467874	11.01	1204785	12.50

**IS 1** = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

- (a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
- (b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.



## Semivolatile Internal Standard Area Summary

**Job Number:** MC30345

Account: FDG Shaw Environmental & Infrastructure

Project: NRG Middletown, 1866 River Road, Middletown, CT

 Check Std:
 MSI3326-CC3320
 Injection Date:
 05/19/14

 Lab File ID:
 I89341.D
 Injection Time:
 16:29

**Instrument ID:** GCMSI Method: SW846 8270D BY SIM

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	513639	4.24	1118277	5.29	554362	6.82	863723	8.24	498158	11.01	1352373	12.49
Upper Limit <sup>a</sup>	1027278		2236554		1108724		1727446		996316	11.51		
Lower Limit b		3.74	559139		277181		431862		249079	10.51		11.99
Lab	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
Sample ID	AREA	RT	AREA	RT								
OP38100-BS	470803	4.24	1033734		502707	6.82	776039	8.25	440255	11.01	1206930	
ZZZZZZ	465977	4.24	1019376		498973	6.82	763046	8.24	430691	11.00	1175658	
ZZZZZZ	558701	4.24	1212210		578948	6.82	862456	8.24	468715	11.00		
ZZZZZZ	486530	4.24	1079818		529007	6.82	805680	8.24	438949	11.00		
ZZZZZZ	478927	4.24	1058754		521979	6.81	806621	8.24	464015		1227494	
ZZZZZZ	467899	4.24	1036204		509732	6.82	789231	8.24	449699		1217031	
ZZZZZZ	460879	4.24	1014584		502644	6.81	765636	8.24	455415	11.00		
OP38136-MB	558221	4.24	1222513		607238	6.82	922207	8.24	526034		1407098	
OP38136-BS	539018	4.24	1188903		581172	6.82	891886	8.24	499162		1313017	
OP38136-BSD	527523	4.24	1171318		569886	6.82	881792	8.24	497061	11.01	1317462	
OP38136-MS	540200	4.24	1192660		588400	6.82	900222	8.24	525535	11.01	1378402	
OP38136-MSD	523248	4.24	1151046		563802	6.82	859828	8.24	489972	11.01	1285133	
MC30400-10	474956	4.24	1046329		519433	6.81	797036	8.24	457148	11.00	1221757	
ZZZZZZ	476993	4.24	1052000		517123	6.81	800063	8.24	458469		1240306	
ZZZZZZ	478622	4.24	1054979	5.29	520803	6.81	803995	8.24	469519		1269469	
ZZZZZZ	483381	4.24	1073640		529347	6.81	814342	8.24	478794		1288308	
ZZZZZZ	452177	4.24	999981		499937	6.81	778723	8.24	456768		1234356	
ZZZZZZ	481680	4.24	1026166		518750	6.81	797002	8.24	471298		1273133	
ZZZZZZ	461002	4.24	1027543		502079	6.81	760911	8.24	453276		1232485	
ZZZZZZ	474276	4.24	1056916		515074	6.81	791191	8.24	462795	11.00	1252235	
ZZZZZZ	533148	4.24	1182489	5.28	571109	6.81	874917	8.24	518931	11.00		
OP38078-BSD	559436	4.24	1243558		605643	6.82	925951	8.24	534477		1376781	
ZZZZZZ	483004	4.24	1079017		535423	6.81	820972	8.24	473061		1242595	
ZZZZZZ	479242	4.24	1047010	5.28	519852	6.81	799559	8.23	460726	11.00	1220142	12.48
ZZZZZZ	493441	4.24	1020030	5.29	483490	6.82	794930	8.25	495066	11.00	1290031	
ZZZZZZ	497252	4.24	1023797	5.29	489531	6.82	788003	8.25	469856	11.00	1215663	12.48
OP38020-MB	584051	4.23	1263865	5.28	617777	6.80	948735	8.23	543970	10.99	1450595	12.47
MC30345-1	568515	4.23	1222175	5.28	602967	6.80	932288	8.23	524632	10.98	1389362	12.47
MC30345-2	506244	4.22	1098611	5.27	536250	6.80	823812	8.22	469490	10.98	1256751	12.47
MC30345-3	547817	4.23	1168264	5.28	559541	6.80	862663	8.23	495003	10.99	1309067	12.47
MC30345-4	581643	4.23	1244610	5.28	600698	6.80	931701	8.23	535758	10.98	1403991	12.47
MC30345-7	545239	4.23	1152956	5.28	554796	6.80	847398	8.23	483669	10.98	1278080	
MC30345-14	547607	4.23	1173036	5.28	572764	6.80	867974	8.23	484273	10.98	1284713	12.47
OP38060-MB	427477	4.23	930219	5.28	450201	6.80	685094	8.22	378236	10.98	999171	12.46
ZZZZZZ	551500	4.23	1187474	5.28	580431	6.80	896488	8.22	509957	10.98	1342292	12.47



Page 2 of 2

## Semivolatile Internal Standard Area Summary

Job Number: MC30345

**Account:** FDG Shaw Environmental & Infrastructure

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

 Check Std:
 MSI3326-CC3320
 Injection Date:
 05/19/14

 Lab File ID:
 I89341.D
 Injection Time:
 16:29

**Instrument ID:** GCMSI Method: SW846 8270D BY SIM

Lab IS 1 IS 2 IS 3 IS 4 IS 5 IS 6 Sample ID AREA RT AREA RT AREA RT AREA RT AREA RT AREA RT

**IS 1** = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.



## Semivolatile Internal Standard Area Summary

Job Number: MC30345

Account: FDG Shaw Environmental & Infrastructure

Project: NRG Middletown, 1866 River Road, Middletown, CT

 Check Std:
 MSR1435-CC1410
 Injection Date:
 05/14/14

 Lab File ID:
 R38986.D
 Injection Time:
 17:06

**Instrument ID:** GCMSR Method: SW846 8270D BY SIM

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std Upper Limit <sup>a</sup>	226986 453972	5.16 5.66	802214 1604428		509733 1019466		910622 1821244		934069 1868138		1293956 2587912	13.79
Lower Limit b	113493	4.66	401107	5.76	254867	7.29	455311	8.59	467035	11.12	646978	12.79
Lab	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
OP38020-BS	236541	5.16	780433	6.26	543673	7.79	987935	9.09	1066389	11.62	1457929	13.29
OP38020-BSD	221009	5.16	726566	6.26	502077	7.79	900569	9.09	974857	11.62	1352371	13.29
ZZZZZZ	195643	5.16	727531	6.26	477684	7.79	828038	9.09	812354	11.62	1050501	13.28
ZZZZZZ	206724	5.16	781722	6.26	532406	7.79	957725	9.09	873800	11.62	1155388	13.29
ZZZZZZ	214691	5.16	893952	6.26	604185	7.79	1129577	9.09	1123085	11.62	1489121	13.29
ZZZZZZ	286719	5.16	1153921	6.26	750090	7.79	1258016	9.09	1188448	11.62	1573978	13.29
ZZZZZZ	268401	5.16	1075509	6.26	721246	7.79	1245975	9.09	1178457	11.62	1475327	13.29
ZZZZZZ	225396	5.16	949291	6.26	622571	7.79	1076499	9.09	1062037	11.62	1409822	13.28
ZZZZZZ	234928	5.16	962134	6.26	634900	7.79	1159217	9.09	1081818	11.62	1424770	13.29
ZZZZZZ	240834	5.16	991460	6.26	647077	7.79	1172675	9.09	1128395	11.62	1390262	13.28
ZZZZZZ	229753	5.16	938685	6.26	633155	7.79	1096622	9.09	1016759	11.62	1370734	13.29
ZZZZZZ	320849	5.16	1258353	6.26	819353	7.79	1414568	9.09	1288999	11.62	1604073	13.29

**IS 1** = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.



## Semivolatile Surrogate Recovery Summary

Job Number: MC30345

**Account:** FDG Shaw Environmental & Infrastructure

Project: NRG Middletown, 1866 River Road, Middletown, CT

Method: SW846 8270D BY SIM Matrix: AQ

#### Samples and QC shown here apply to the above method

Lab	Lab			
Sample ID	File ID	<b>S1</b>	<b>S2</b>	S3
MC30345-1	I89383.D	44	39	71
MC30345-2	I89384.D	50	46	70
MC30345-3	I89385.D	54	48	65
MC30345-4	I89386.D	54	52	69
MC30345-7	I89387.D	52	51	60
MC30345-8	I89333.D	0* a	93	0* a
MC30345-14	I89388.D	90	82	79
OP38020-BS	R38988.D	81	68	84
OP38020-BSD	R38989.D	80	67	81
OP38020-MB	I89382.D	85	76	77
OP38029-BS	I89331.D	0* a	99	0* a
OP38029-BSD	I89332.D	0* a	88	0* a
OP38029-MB	I89329.D	0* a	106	0* a

#### Surrogate Recovery Limits Compounds

S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

(a) Surrogate standard not added. EPH extract analyzed.





## GC Semi-volatiles

## QC Data Summaries

### Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries



Method: MADEP EPH REV 1.1

## **Method Blank Summary**

**Job Number:** MC30345

**Account:** FDG Shaw Environmental & Infrastructure

Project: NRG Middletown, 1866 River Road, Middletown, CT

Sample OP38027-MB	<b>File ID</b> DE4280.D	<b>DF</b> 1	<b>Analyzed</b> 05/15/14	By KN	<b>Prep Date</b> 05/09/14	Prep Batch OP38027	Analytical Batch GDE368

#### The QC reported here applies to the following samples:

MC30345-1, MC30345-2, MC30345-3, MC30345-7, MC30345-8, MC30345-14

CAS No.	Compound	Result	RL	MDL	Units Q
	C11-C22 Aromatics (Unadj.)	ND	100	100	ug/l
	C9-C18 Aliphatics	ND	100	100	ug/l
	C19-C36 Aliphatics	ND	100	100	ug/l
	C11-C22 Aromatics	ND	100	100	ug/l

CAS No.	<b>Surrogate Recoveries</b>	Limits	
84-15-1	o-Terphenyl	79%	40-140%
321-60-8	2-Fluorobiphenyl	93%	40-140%
3386-33-2	1-Chlorooctadecane	62%	40-140%
580-13-2	2-Bromonaphthalene	66%	40-140%



Method: MADEP EPH REV 1.1

## Blank Spike/Blank Spike Duplicate Summary

Job Number: MC30345

Account: FDG Shaw Environmental & Infrastructure

**Project:** NRG Middletown, 1866 River Road, Middletown, CT

Sample OP38027-BS OP38027-BSD	<b>File ID</b> DE4281.D DE4282.D	<b>DF</b> 1	<b>Analyzed</b> 05/15/14 05/15/14	By KN KN	Prep Date 05/09/14 05/09/14	Prep Batch OP38027 OP38027	Analytical Batch GDE368 GDE368

#### The QC reported here applies to the following samples:

MC30345-1, MC30345-2, MC30345-3, MC30345-7, MC30345-8, MC30345-14

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
	C11-C22 Aromatics (Unadj.)	800	769	96	747	93	3	40-140/25
	C9-C18 Aliphatics	300	187	62	178	59	5	40-140/25
	C19-C36 Aliphatics	400	324	81	321	80	1	40-140/25

CAS No.	<b>Surrogate Recoveries</b>	BSP	BSD	Limits
84-15-1	o-Terphenyl	84%	84%	40-140%
321-60-8	2-Fluorobiphenyl	90%	90%	40-140%
3386-33-2	1-Chlorooctadecane	66%	66%	40-140%
580-13-2	2-Bromonaphthalene	76%	66%	40-140%

Sample	Compound	Col #1	Col #2	Breakthrough	Limit
OP38027-BS	2-Methylnaphthalene	31.9	0.069	0.2%	5.0
OP38027-BS	Naphthalene	31.1	0.30	1.0%	5.0
OP38027-BSD	2-Methylnaphthalene	29.0	0.53	1.8%	5.0
OP38027-BSD	Naphthalene	27.0	1.4	4.9%	5.0



<sup>\* =</sup> Outside of Control Limits.

## Semivolatile Surrogate Recovery Summary

**Job Number:** MC30345

**Account:** FDG Shaw Environmental & Infrastructure

Project: NRG Middletown, 1866 River Road, Middletown, CT

Method: MADEP EPH REV 1.1 Matrix: AQ

#### Samples and QC shown here apply to the above method

Lab				
File ID	<b>S1</b> <sup>a</sup>	<b>S2</b> a	<b>S3</b> b	<b>S4</b> a
DE4285.D	85	92	67	70
DE4286.D	70	85	57	69
DE4287.D	87	92	62	78
DE4288.D	85	89	67	70
DE4289.D	84	92	68	72
DE4291.D	78	91	55	80
DE4281.D	84	90	66	76
DE4282.D	84	90	66	66
DE4280.D	79	93	62	66
	DE4285.D DE4286.D DE4287.D DE4288.D DE4289.D DE4291.D DE4281.D DE4282.D	File ID     S1 a       DE4285.D     85       DE4286.D     70       DE4287.D     87       DE4288.D     85       DE4289.D     84       DE4291.D     78       DE4281.D     84       DE4282.D     84	File ID       S1 a       S2 a         DE4285.D       85       92         DE4286.D       70       85         DE4287.D       87       92         DE4288.D       85       89         DE4289.D       84       92         DE4291.D       78       91         DE4281.D       84       90         DE4282.D       84       90	File ID         S1 a         S2 a         S3 b           DE4285.D         85         92         67           DE4286.D         70         85         57           DE4287.D         87         92         62           DE4288.D         85         89         67           DE4289.D         84         92         68           DE4291.D         78         91         55           DE4281.D         84         90         66           DE4282.D         84         90         66

Surrogate Recovery Compounds Limits

 S1 = o-Terphenyl
 40-140%

 S2 = 2-Fluorobiphenyl
 40-140%

 S3 = 1-Chlorooctadecane
 40-140%

 S4 = 2-Bromonaphthalene
 40-140%

(a) Recovery from GC signal #1(b) Recovery from GC signal #2





## Metals Analysis

## QC Data Summaries

### Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries



## BLANK RESULTS SUMMARY Part 2 - Method Blanks

## Login Number: MC30345 Account: FDG - Shaw Environmental & Infrastructure Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23021 Matrix Type: AQUEOUS Methods: SW846 6010C

Units: ug/l

Prep Date:

05/09/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	6.1	40		
Antimony	6.0	1.1	1.9		
Arsenic	4.0	2.2	2.9	-1.0	<4.0
Barium	50	.19	.81		
Beryllium	4.0	.08	.25		
Bismuth	50	1	3		
Boron	100	.81	1.4		
Cadmium	4.0	. 22	.5		
Calcium	5000	8.5	38		
Chromium	10	.74	1.4		
Cobalt	50	.28	. 4		
Copper	25	.86	7		
Gold	50	1.8	5		
Iron	100	4.4	20		
Lead	5.0	1.6	1.7	-0.20	<5.0
Lithium	500	29	100		
Magnesium	5000	43	59		
Manganese	15	.17	.81		
Molybdenum	100	. 4	.77		
Nickel	40	. 45	.57		
Palladium	50	2	7.6		
Platinum	50	8.7	14		
Potassium	5000	24	160		
Selenium	10	1.4	4.8	0.20	<10
Silicon	100	2.1	45		
Silver	5.0	.47	1		
Sodium	5000	42	60		
Sulfur	50	2.9	8		
Strontium	10	.1	.26		
Thallium	5.0	1.7	1.9		
Tin	100	1.5	1.4		
Titanium	50	.48	1.8		
Tungsten	100	9.3	16		

60 of 77
ACCUTEST.
MC30345
LABORATORIES

#### BLANK RESULTS SUMMARY Part 2 - Method Blanks

#### Login Number: MC30345

Account: FDG - Shaw Environmental & Infrastructure Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23021 Methods: SW846 6010C Matrix Type: AQUEOUS Units:  $\mbox{ug/l}$ 

Prep Date:

05/09/14

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.9	2.8	0.0	<10
Zinc	20	.91	.5	0.20	<20
Zirconium	50	.76	2.2		

Associated samples MP23021: MC30345-2, MC30345-3, MC30345-5, MC30345-6, MC30345-9

Results < IDL are shown as zero for calculation purposes (\*) Outside of QC limits

(anr) Analyte not requested

61 of 77
ACCUTEST.
MC30345
LABORATORIES

#### SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC30345
Account: FDG - Shaw Environmental & Infrastructure
Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23021 Methods: SW846 6010C Matrix Type: AQUEOUS Units: ug/1

Prep Date:			05/09/14					05/09/14	ı
Metal	BSP Result	Spikelot MPICP	% Rec	QC Limits	BSD Result	Spikelot MPICP	% Rec	BSD RPD	QC Limit
Aluminum									
Antimony									
Arsenic	498	500	99.6	80-120	510	500	102.0	2.4	20
Barium									
Beryllium									
Bismuth									
Boron									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Gold									
Iron									
Lead	1010	1000	101.0	80-120	1030	1000	103.0	2.0	20
Lithium									
Magnesium									
Manganese									
Molybdenum									
Nickel									
Palladium									
Platinum									
Potassium									
Selenium	503	500	100.6	80-120	513	500	102.6	2.0	20
Silicon									
Silver									
Sodium									
Sulfur									
Strontium									
Thallium									
Tin									
Titanium									
Tungsten									



#### SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC30345
Account: FDG - Shaw Environmental & Infrastructure
Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23021 Methods: SW846 6010C Matrix Type: AQUEOUS Units:  $\mbox{ug/l}$ 

Prep Date: 05/09/14 05/09/14

Metal	BSP Result	Spikelot MPICP	% Rec	QC Limits	BSD Result	Spikelot MPICP	: % Rec	BSD RPD	QC Limit
Vanadium	484	500	96.8	80-120	492	500	98.4	1.6	20
Zinc	502	500	100.4	80-120	515	500	103.0	2.6	20
Zirconium									

Associated samples MP23021: MC30345-2, MC30345-3, MC30345-5, MC30345-6, MC30345-9

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(anr) Analyte not requested



#### SERIAL DILUTION RESULTS SUMMARY

# Login Number: MC30345 Account: FDG - Shaw Environmental & Infrastructure Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23021 Methods: SW846 6010C Matrix Type: AQUEOUS Units:  $\mbox{ug/l}$ 

Prep Date: 05/09/14

Metal	MC30383- Original	7 SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	0.00	0.00	NC	0-10
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Gold				
Iron				
Lead	0.00	0.00	NC	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Palladium				
Platinum				
Potassium				
Selenium	1.50	0.00	100.0(a)	0-10
Silicon				
Silver				
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium				
Tungsten				

#### SERIAL DILUTION RESULTS SUMMARY

Login Number: MC30345 Account: FDG - Shaw Environmental & Infrastructure Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23021 Methods: SW846 6010C

Matrix Type: AQUEOUS Units: ug/l

05/09/14 Prep Date:

Associated samples MP23021: MC30345-2, MC30345-3, MC30345-5, MC30345-6, MC30345-9

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

#### BLANK RESULTS SUMMARY Part 2 - Method Blanks

## Login Number: MC30345 Account: FDG - Shaw Environmental & Infrastructure Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23028 Methods: SW846 6010C Matrix Type: AQUEOUS Units: ug/1

Prep Date:	Prep Date:						05/12/14		05/12/14	
Metal	RL	IDL	MDL	MB raw	final	MB raw	final	MB raw	final	
Aluminum	200	6.1	40							
Antimony	6.0	1.1	1.9							
Arsenic	4.0	2.2	2.9	-0.90	<4.0	-1.1	<4.0	-1.6	<4.0	
Barium	50	.19	.81							
Beryllium	4.0	.08	.25							
Bismuth	50	1	3							
Boron	100	.81	1.4							
Cadmium	4.0	.22	.5							
Calcium	5000	8.5	38							
Chromium	10	.74	1.4							
Cobalt	50	.28	. 4							
Copper	25	.86	7							
Gold	50	1.8	5							
Iron	100	4.4	20							
Lead	5.0	1.6	1.7	1.0	<5.0	0.90	<5.0	0.50	<5.0	
Lithium	500	29	100							
Magnesium	5000	43	59							
Manganese	15	.17	.81							
Molybdenum	100	. 4	.77							
Nickel	40	. 45	.57							
Palladium	50	2	7.6							
Platinum	50	8.7	14							
Potassium	5000	24	160							
Selenium	10	1.4	4.8	2.2	<10	2.0	<10	0.40	<10	
Silicon	100	2.1	45							
Silver	5.0	. 47	1							
Sodium	5000	42	60							
Sulfur	50	2.9	8							
Strontium	10	.1	.26							
Thallium	5.0	1.7	1.9							
Tin	100	1.5	1.4							
Titanium	50	.48	1.8							
Tungsten	100	9.3	16							



#### BLANK RESULTS SUMMARY Part 2 - Method Blanks

#### Login Number: MC30345

Account: FDG - Shaw Environmental & Infrastructure Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23028 Methods: SW846 6010C Matrix Type: AQUEOUS Units: ug/l

Prep Date:					05/12/1	4	05/12/14	4	05/12/14	
Metal	RL	IDL	MDL	MB raw	final	MB raw	final	MB raw	final	
Vanadium	10	.9	2.8	0.10	<10	0.20	<10	0.0	<10	
Zinc	20	.91	.5	0.30	<20	1.7	<20	0.80	<20	
Zirconium	50	.76	2.2							

Associated samples MP23028: MC30345-15

Results < IDL are shown as zero for calculation purposes (\*) Outside of QC limits (anr) Analyte not requested



#### SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

# Login Number: MC30345 Account: FDG - Shaw Environmental & Infrastructure Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23028 Methods: SW846 6010C Matrix Type: AQUEOUS Units: ug/1

Prep Date:			05/12/14					05/12/14	
Metal	BSP Result	Spikelot MPICP5	% Rec	QC Limits	BSD Result	Spikelot MPICP5	% Rec	BSD RPD	QC Limit
Aluminum									
Antimony									
Arsenic	561	500	112.2	80-120	574	500	114.8	2.3	20
Barium	anr								
Beryllium									
Bismuth	anr								
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Gold									
Iron	anr								
Lead	997	1000	99.7	80-120	1020	1000	102.0	2.3	20
Lithium									
Magnesium									
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Platinum									
Potassium									
Selenium	519	500	103.8	80-120	529	500	105.8	1.9	20
Silicon									
Silver	anr								
Sodium									
Sulfur									
Strontium									
Thallium									
Tin	anr								
Titanium	anr								
Tungsten									



#### SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC30345 Account: FDG - Shaw Environmental & Infrastructure Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23028 Methods: SW846 6010C Matrix Type: AQUEOUS Units: ug/l

05/12/14 05/12/14 Prep Date:

Metal	BSP Result	Spikelot MPICP5	% Rec	QC Limits	BSD Result	Spikelot MPICP5	% Rec	BSD RPD	QC Limit
Vanadium	503	500	100.6	80-120	519	500	103.8	3.1	20
Zinc	537	500	107.4	80-120	552	500	110.4	2.8	20

Zirconium

Associated samples MP23028: MC30345-15

Results < IDL are shown as zero for calculation purposes (\*) Outside of QC limits (anr) Analyte not requested



#### SERIAL DILUTION RESULTS SUMMARY

# Login Number: MC30345 Account: FDG - Shaw Environmental & Infrastructure Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23028 Methods: SW846 6010C Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/12/14

Metal	MC30445 Origina	-10 1 SDL 1:5	%DIF	QC Limits			
Aluminum							
Antimony							
Arsenic	0.00	0.00	NC	0-10			
Barium	anr						
Beryllium							
Bismuth	anr						
Boron	anr						
Cadmium	anr						
Calcium	anr						
Chromium	anr						
Cobalt	anr						
Copper	anr						
Gold							
Iron	anr						
Lead	0.00	0.00	NC	0-10			
Lithium							
Magnesium							
Manganese	anr						
Molybdenum							
Nickel	anr						
Palladium							
Platinum							
Potassium							
Selenium	1.40	0.00	100.0(a)	0-10			
Silicon							
Silver	anr						
Sodium							
Sulfur							
Strontium							
Thallium							
Tin	anr						
Titanium	anr						
Tungsten							

#### SERIAL DILUTION RESULTS SUMMARY

Login Number: MC30345
Account: FDG - Shaw Environmental & Infrastructure
Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23028 Methods: SW846 6010C Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/12/14

Metal	MC30445-10 Original SDL 1:	%DIF
anadium	0.00 0.00	NC
Zinc	7.40 13.5	82.4 (a)

Zirconium

Associated samples MP23028: MC30345-15

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits (anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample  $\,$  concentration (< 50 times IDL).

71 of 77
ACCUTEST.
MC30345
LABORATORIES

#### BLANK RESULTS SUMMARY Part 2 - Method Blanks

## Login Number: MC30345 Account: FDG - Shaw Environmental & Infrastructure Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23046 Matrix Type: AQUEOUS Methods: SW846 6010C

Units: ug/l

Prep Date:

05/14/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	6.1	40		
Antimony	6.0	1.1	1.9		
Arsenic	4.0	2.2	2.9	-0.10	<4.0
Barium	50	.19	.81		
Beryllium	4.0	.08	.25		
Bismuth	50	1	3		
Boron	100	.81	1.4		
Cadmium	4.0	.22	.5		
Calcium	5000	8.5	38		
Chromium	10	.74	1.4		
Cobalt	50	. 28	. 4		
Copper	25	.86	7		
Gold	50	1.8	5		
Iron	100	4.4	20		
Lead	5.0	1.6	1.7	-1.6	<5.0
Lithium	500	29	100		
Magnesium	5000	43	59		
Manganese	15	.17	.81		
Molybdenum	100	. 4	.77		
Nickel	40	. 45	.57		
Palladium	50	2	7.6		
Platinum	50	8.7	14		
Potassium	5000	24	160		
Selenium	10	1.4	4.8	-0.60	<10
Silicon	100	2.1	45		
Silver	5.0	. 47	1		
Sodium	5000	42	60		
Sulfur			8		
Strontium		.1	.26		
Thallium	5.0	1.7	1.9		
Tin			1.4		
Titanium	50	.48	1.8		
Tungsten	100	9.3	16		



## BLANK RESULTS SUMMARY Part 2 - Method Blanks

#### Login Number: MC30345

Account: FDG - Shaw Environmental & Infrastructure Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23046 Methods: SW846 6010C Matrix Type: AQUEOUS Units:  $\mbox{ug/l}$ 

Prep Date:

05/14/14

Metal	RL	IDL	MDL	MB raw	final
Vanadium	10	.9	2.8	-0.20	<10
Zinc	20	.91	.5	0.80	<20
Zirconium	50	.76	2.2		

Associated samples MP23046: MC30345-10, MC30345-11, MC30345-12, MC30345-13, MC30345-14, MC30345-16

Results < IDL are shown as zero for calculation purposes (\*) Outside of QC limits

(anr) Analyte not requested

73 of 77
ACCUTEST

MC30345

LABORATORIES

#### SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

# Login Number: MC30345 Account: FDG - Shaw Environmental & Infrastructure Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23046 Methods: SW846 6010C Matrix Type: AOUEOUS Units: ug/l

Matrix Type:	AQUEOUS					Unit	s: ug/l		
Prep Date:			05/14/14					05/14/14	
Metal	BSP Result	Spikelot MPICP5	% Rec	QC Limits	BSD Result	Spikelot MPICP5	% Rec	BSD RPD	QC Limit
Aluminum									
Antimony									
Arsenic	572	500	114.4	80-120	566	500	113.2	1.1	20
Barium	anr								
Beryllium									
Bismuth	anr								
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Gold									
Iron									
Lead	1020	1000	102.0	80-120	999	1000	99.9	2.1	20
Lithium									
Magnesium									
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Platinum									
Potassium									
Selenium	531	500	106.2	80-120	521	500	104.2	1.9	20
Silicon									
Silver	anr								
Sodium									
Sulfur									
Strontium									
Thallium									
Tin	anr								
Titanium	anr								
Tungsten									



# SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC30345
Account: FDG - Shaw Environmental & Infrastructure
Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23046 Methods: SW846 6010C Matrix Type: AQUEOUS Units: ug/1

Prep Date: 05/14/14 05/14/14

Metal	BSP Result	Spikelot MPICP5	% Rec	QC Limits	BSD Result	Spikelot MPICP5	% Rec	BSD RPD	QC Limit
Vanadium	524	500	104.8	80-120	508	500	101.6	3.1	20
Zinc	543	500	108.6	80-120	532	500	106.4	2.0	20
Zirconium									

Associated samples MP23046: MC30345-10, MC30345-11, MC30345-12, MC30345-13, MC30345-14, MC30345-16

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(anr) Analyte not requested

# SERIAL DILUTION RESULTS SUMMARY

# Login Number: MC30345 Account: FDG - Shaw Environmental & Infrastructure Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23046 Methods: SW846 6010C Matrix Type: AQUEOUS Units:  $\mbox{ug/l}$ 

Prep Date: 05/14/14

Metal	MC30328- Original	1F SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	0.00	0.00	NC	0-10
Barium	anr			
Beryllium				
Bismuth	anr			
Boron	anr			
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	anr			
Copper	anr			
Gold				
Iron				
Lead	0.00	0.00	NC	0-10
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	anr			
Palladium				
Platinum				
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	anr			
Sodium				
Sulfur				
Strontium				
Thallium				
Tin				
Titanium	anr			
Tungsten				

# SERIAL DILUTION RESULTS SUMMARY

Login Number: MC30345
Account: FDG - Shaw Environmental & Infrastructure
Project: NRG Middletown, 1866 River Road, Middletown, CT

QC Batch ID: MP23046 Methods: SW846 6010C Matrix Type: AQUEOUS Units:  $\mbox{ug/l}$ 

Prep Date: 05/14/14

Metal	MC30328- Original	-1F L SDL 1:5	%DIF	QC Limits
Vanadium	1.00	0.00	100.0(a)	0-10
Zinc	10.7	13.3	24.3 (a)	0-10
Zirconium				

Associated samples MP23046: MC30345-10, MC30345-11, MC30345-12, MC30345-13, MC30345-14, MC30345-16

Results < IDL are shown as zero for calculation purposes

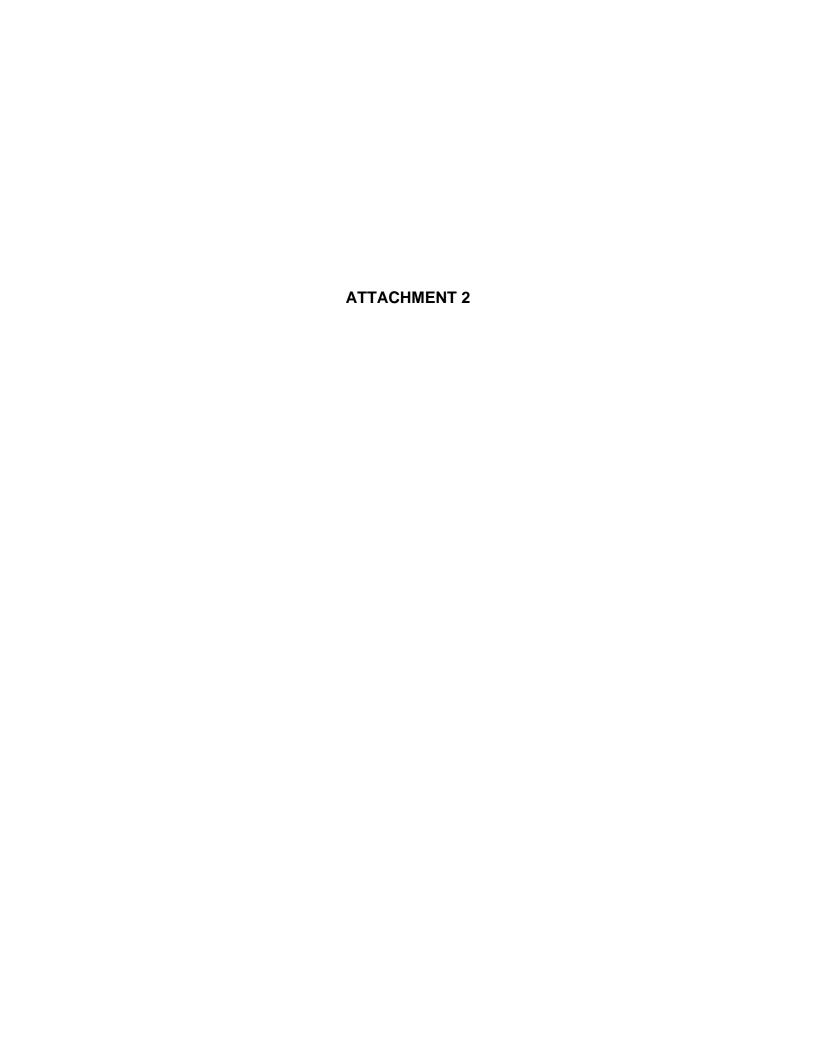
(\*) Outside of QC limits
(anr) Analyte not requested

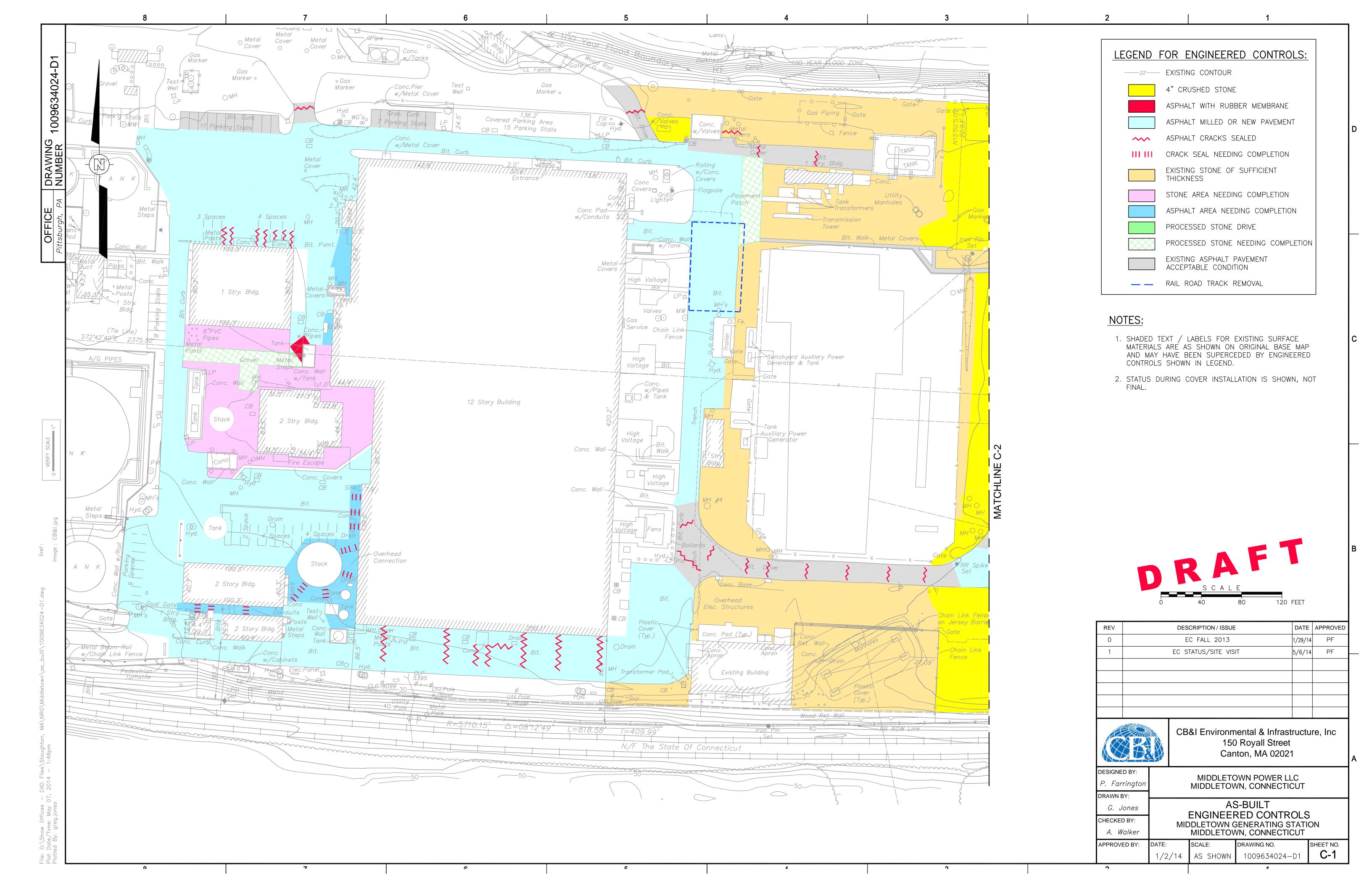
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

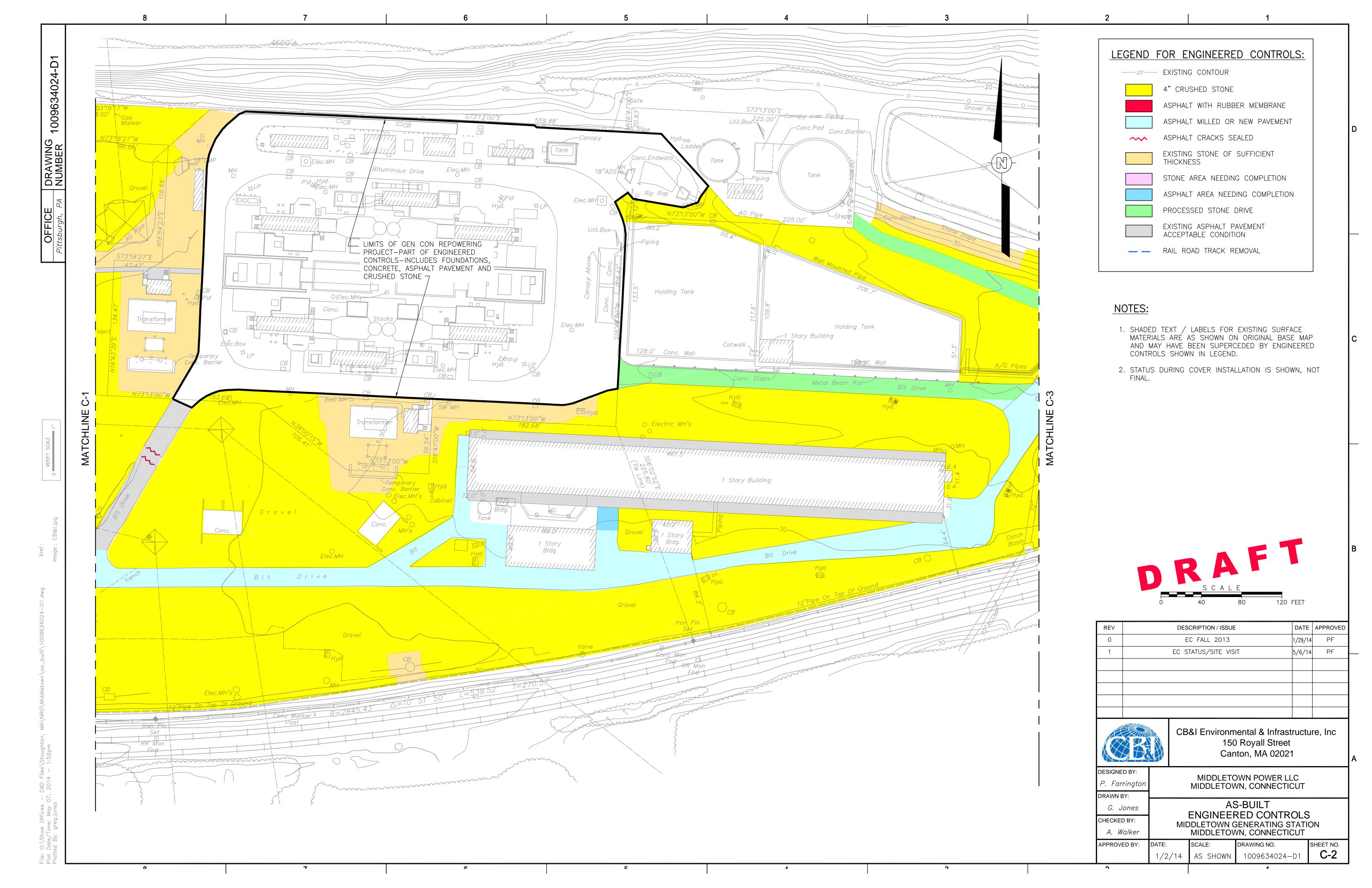
77 of 77
ACCUTEST

MC30345

LABORATORIES

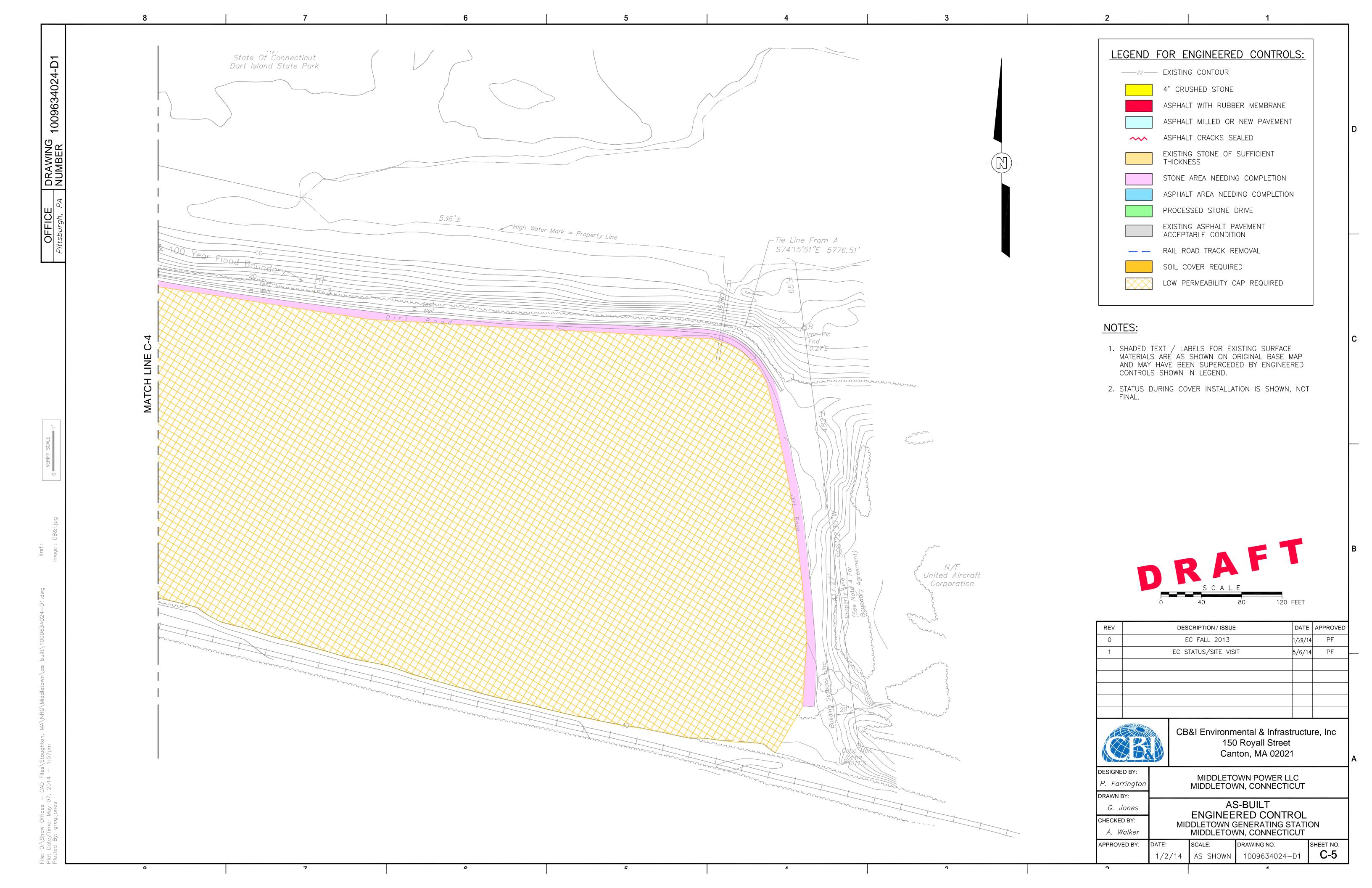


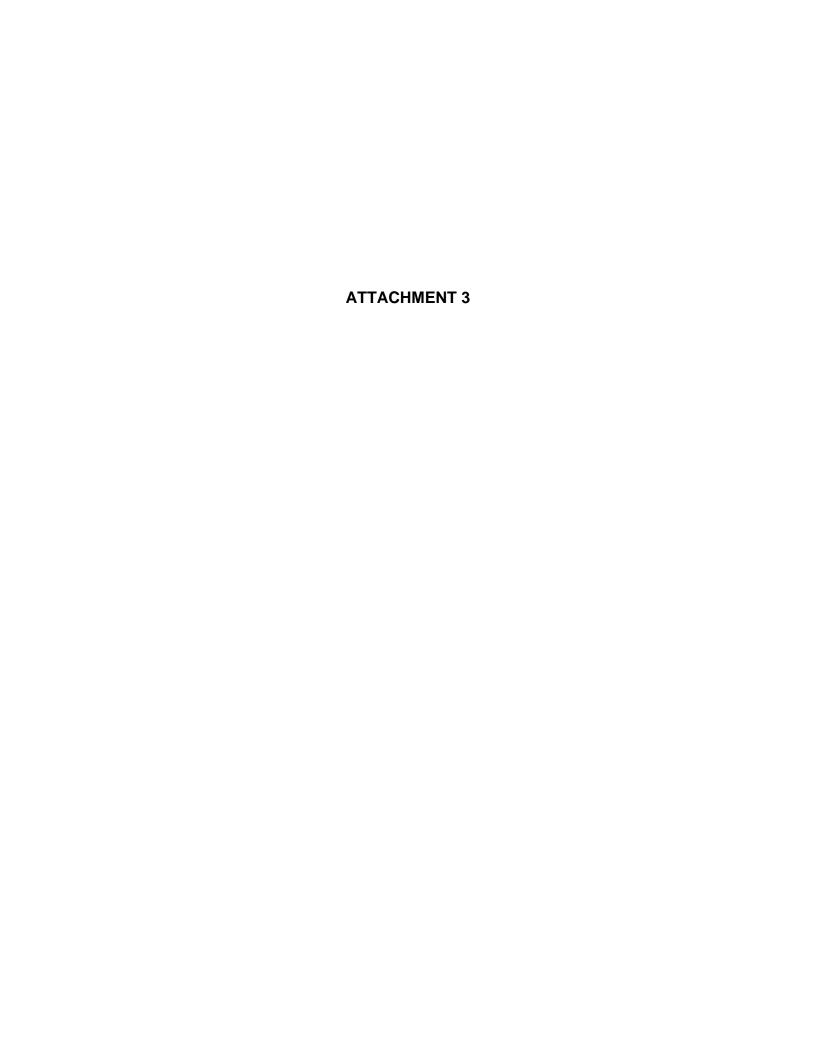












# **Engineered Control Inspection Checklist Middletown Generating Station** Middletown, CT

Completed by: <u>Keith Shortsleeve</u>
Company: NRG
Date: <u>02-5-14</u>
Signature: Kirth / Ce

**Problem Code** 

**PDSO** = Perimeter Drainage Swale Obstructed **ACE 1 or 2** = Aggregate Cover Erosion, Moderate or Severe

ACSW 1 or 2 = Aggregate Cover Subsurface Washout, Moderate or SeverDCO = Drainage Culvert Obstructed

**SCE 1 or 2** = Soil Cover Erosion, Moderate or Severe AP C1 = Asphalt Pavement Cracks > 1/2 inch

SCSW 1 or 2 = Soil Cover Subsurface Washout, Moderate or Severe AP C2 = Asphalt "Potholes"

GD 1 or 2 = Vegetation Dead, Moderate or Severe **SF** = Slope Failure  $\mathbf{O} = \text{Other}$ 

**GE** 1 or 2 = Vegetation Erosion, Moderate or Severe

**GP** = Vegetation Water Ponding Observed

**GSF** = Vegetation Slope Failure

 $\label{eq:GSW} \textbf{GSW} = \textbf{Vegetation Subsurface Washout}$ 

Domodial Amag (1)	Ducklam Co.3:	
Remedial Areas (1)	Problem Code	Repair Requirements and Notes (Provide Description)
AOC 1 (Ash Settling Basins)		
Low Permeability Engineered Control		Construction partially complete.
Aggregate Engineered Control		Construction in progress.
Soil Engineered Control		Construction incomplete.
AOC 9 Alarda 9 Carda Faril Address T		
AOC 8 (North & South Fuel Additive Ta	anks)	
Asphalt Engineered Control		Construction complete.
AOC 13 (Eastern half)		
Aggregate Engineered Control		Construction partially complete.
Soil Engineered Control		Construction incomplete.
Asphalt Engineered Control		Construction incomplete
Asphalt Engineered Collitor		Construction incomplete

- (1) Use Sheets 1, 2, 3 and 4 of the Engineered Control Drawings for the Inspection Plan.
- (2) Document condition of each area identified and repaired during previous inspection.

# Engineered Control Inspection Checklist Middletown Generating Station Middletown, CT

Completed by: <u>Keith Shortsleeve</u>					
Company: NRG					
Date: <u>05-5-14</u>					
Signature: Kirch See					

**Problem Code** 

ACE 1 or 2 = Aggregate Cover Erosion, Moderate or Severe PDSO = Perimeter Drainage Swale Obstructed

ACSW 1 or 2 = Aggregate Cover Subsurface Washout, Moderate or SeverDCO = Drainage Culvert Obstructed

SCE 1 or 2 = Soil Cover Erosion, Moderate or Severe

AP C1 = Asphalt Pavement Cracks > 1/2 inch

SCSW 1 or 2 = Soil Cover Subsurface Washout, Moderate or Severe AP C2 = Asphalt "Potholes"

GD 1 or 2 = Vegetation Dead, Moderate or Severe
GE 1 or 2 = Vegetation Erosion, Moderate or Severe
O = Other

**GP** = Vegetation Water Ponding Observed

**GSF** = Vegetation Slope Failure

**GSW** = Vegetation Subsurface Washout

Domodial Amag (1)	Ducklam Co.3:	
Remedial Areas (1)	Problem Code	Repair Requirements and Notes (Provide Description)
AOC 1 (Ash Settling Basins)		
Low Permeability Engineered Control		Construction partially complete.
Aggregate Engineered Control		Construction in progress.
Soil Engineered Control		Construction incomplete.
AOC 9 Alarda 9 Carda Faril Address T		
AOC 8 (North & South Fuel Additive Ta	anks)	
Asphalt Engineered Control		Construction complete.
AOC 13 (Eastern half)		
Aggregate Engineered Control		Construction partially complete.
Soil Engineered Control		Construction incomplete.
Asphalt Engineered Control		Construction incomplete
Asphalt Engineered Collitor		Construction incomplete

#### Notes

- (1) Use Sheets 1, 2, 3 and 4 of the Engineered Control Drawings for the Inspection Plan.
- (2) Document condition of each area identified and repaired during previous inspection.